# Transition Design: Designing for Systems-Level Change

Presented by Terry Irwin (virtually) to the Policy Community Conference 2023

Note: This document is a reference tool during the presentation. The speaker’s notes and spoken words may vary.

## Presentation

**Expected length: 25 minutes**

The screen shows a blue background with text that displays:

Terry Irwin

Professor, School of Design

Director, Transition Design Institute

Carnegie Mellon University

Transition Design: Designing for Systems-Level Change (and transitions toward more sustainable futures)

**TERRY IRWIN: Thank you so much—I’m really happy to be joining you all today. In the next half hour or so, I’m going to talk to you about Transition Design: an approach for addressing the many wicked problems confronting 21st century societies, and the need to intentionally transition our communities, organizations and entire societies toward better long-term futures.**

We see a group of screen captures of articles related to sustainable futures and systems changes.

Text displays: Transition Design brings together two global memes:

1. Societal transitions toward more sustainable futures
2. The need for intentional, systems-level change and wicked problems resolution

**TERRY IRWIN: Transition Design brings together two global memes: FIRST the idea that entire societies must transition toward more sustainable, equitable and desirable long-term futures, and SECOND, the realization that these transitions will require intentional, systems-level change.**

**You can see evidence of these memes in the number of transition-related projects and initiatives springing up around the world and the recent rise of what I’ll call ‘deep’ systems thinking and the proliferation of knowledge, tools and processes for understanding complex systems and systems problems.**

There is a collage of images denoting complex problems:

* People holding Trump signs outside the Washington Capitol
* A woman and man in front of a burning apartment complex
* Wildfires
* A tent city
* Migrants climbing a border wall
* Flooding and people wading through flood waters
* A group of people hold a sign that says “Respect Indigenous Peoples Rights. End Colonialism.”
* A series of homes
* Women dressed as handmaids in red cloaks with white bonnets

**TERRY IRWIN: 21st societies are facing countless, complex problems. Things like social and political polarization, climate change, war, forced migration, erosion of human rights —especially women’s rights…**

The collage of images changes to:

* People in front of a collapsed building
* The flags of Israel and Palestine
* A family of 7 holding assault rifles in front of a Christmas tree
* Faces of tech moguls
* Police in riot gear on fire
* A line up of migrants in winter jackets
* A group of men gesturing the Hitler salute
* Kim Kardashian in her closet
* A $45 million home
* The Sackler family and their worth ($13 billion)
* A man self-injecting with a needle

**TERRY IRWIN: ...the increasing gap between the rich and the poor and the emergence of a small, uberwealthy, and highly influential group, mostly dominated by white men.**

The screen is white with grey text that lists wicked problems including, but not limited to, poverty, terrorism, climate change, forced migration, sex trafficking, crime, racism, gentrification.

Text displays: Wicked problems

**TERRY IRWIN: Designers refer to these as wicked problems. The list is very long, and these problems are so ubiquitous that we tend to think of them as global and therefore, a step or two removed from our everyday lives. But here’s the thing: wicked problems always manifest in place and culture-specific ways.**

The same screen with a list of wicked problems remains, but now a diagram is superimposed. A middle circle is surrounded by 10 smaller circles with text. Arrows point from the middle circle to two other circles, denoted with an \*.

Text displays:

Systems problems: Wicked Problems

* Every wicked problem is connected others
* Every solution ramifies throughout the system
* Solutions are not right/wrong, but better/worse
* Can take a long time to evaluation solutions
* Problems are never completely solved
* Every problem is unique and constantly changing
* There is no clear, shared problem definition
* Are multi-causal, multi-scalar & interconnected\*
* Multiple stakeholders with conflicting agendas
* Straddle organizational & disciplinary boundaries\*

**TERRY IRWIN: Because of these characteristics these problems straddle organizational and disciplinary boundaries, are multi-causal AND multi-scalar.**

The same screen with a list of wicked problems remains, but now the arrow now points only to “Multiple stakeholders with conflicting agendas”. There is an illustration of 5 people with red arrows connecting them in every possible way.

**TERRY IRWIN: They are comprised of multiple stakeholder groups with conflicting agendas and uneven power relations.**

The same screen with a list of wicked problems remains, but now the illustration of people changed to a series of grey circles. In the middle of the circle is displayed “SYSTEMIC SOLUTION”, and an arrow points to “Every solution ramifies throughout the system”.

**TERRY IRWIN: Every solution we implement ramifies throughout the system in ways that are entirely unpredictable (it’s why so many solutions fail).**

The same screen with a list of wicked problems remains, but now the illustration of grey circles changes to a black squiggle. A red arrow points to “Every problem is unique and constantly changing”.

**TERRY IRWIN: Every problem is unique and constantly changing—every solution we implement changes the entire system.**

The same screen with a list of wicked problems remains, but now the black squiggle changes to images previously displayed of wicked problems, connected by arrows. A red arrow points to “Every wicked problem is connected to others”.

**TERRY IRWIN: And perhaps the most important characteristic: wicked problems are always connected to other wicked problems, in complex ways, at multiple levels of scale. Learning to see and map these interconnections and interdependencies is at the heart of systems thinking, and we believe is the key to resolving wicked problems. Often, these problems remain invisible to us, because we’re too focused on the smaller problems at the end of our nose. Here’s what happens.**

The screen changes to a photograph of a crowded street.

Text displays: We usually problem-solve within the context of our sector, field or discipline

GOVERNMENT

POLICY

NON-PROFIT

NGOs

FUNDING

INDUSTRY

“THE” PROBLEM

**TERRY IRWIN: We view problems within the narrow (but manageable) contexts of our departments, organizations, industry sectors, fields or disciplines… areas like local or national government, policy, the non-profit sector, NGOs, funding and philanthropy, all kinds of industry, and many more. We identify a problem, within our organization or sector—and usually it’s urgent—we’re all doing triage all the time…**

The photograph is the same. An image of a Lone Ranger poster is displayed. A bullet is shown with the text “silver bullet solution” and is pointed at the the text.

Text displays: We're aiming a single, silver bullet solution at a single problem...

**TERRY IRWIN: ...and we set about finding a solution for it. And we secretly hope to find that single, silver-bullet solution for that single problem—this hope runs deep in all of us. That if I just look hard enough, I’ll find the “right” solution…but we often harbor other hopes as well.**

A bubble appears above the bullet.

Text displays: Technology, $, an app is the answer!

**TERRY IRWIN: We often secretly hope it can be solved with either money and/or technology because these are clear, quick, “do-able” fixes.**

The silver bullet pointed at “THE PROBLEM” is repeated 3 times.

**TERRY IRWIN: And this is going on in different sectors all the time. The only real difference is that each sector or discipline has its own unique problem-solving methodologies, processes and tools. And these approaches work well as long as we stay within our own fields of expertise. But trying to collaborate across disciplinary divides (or perhaps even across departments in a large organization) can be challenging to say the least.**

Superimposed on the previous screen is an illustration of a group of blindfolded scientists on and around an elephant trying to guess what they are touching. Each scientist is holding a different part of the elephant.

Text displays:

* It’s a fan!
* It’s a rope!
* It’s a wall!
* It’s a tree!
* It’s a snake!
* It’s a spear!

**TERRY IRWIN: It’s a little like the parable of the blindfolded scientists and the elephant. The problem looks like a different animal, depending on your perspective, so achieving a shared problem definition (which is crucial to problem resolution), becomes impossible.**

The elephant illustration vanishes. The 3 bullets remain.

Text displays: Silver bullet solutions only work on simple problems we’ve seen before (and these are only simple because we’ve framed them in really tight contexts)

**TERRY IRWIN: But here’s the catch: Single, silver bullet solutions only work on simple problems. When it comes to wicked ones—they’re rubbish. Here is basically what happens.**

Instead of a bullet pointed at the words “The problem”, there are now 3 problems connected.

Text displays: The one problem we were focused on is really part of a problem cluster. So, the one solution for that one problem is ineffective, or worse – useless.

**TERRY IRWIN: We think we are addressing a single problem when we’re actually dealing with a problem cluster; multiple, interdependent problems whose interconnections remain invisible to us.**

The bullet points to 1 of 3 problems.

Text displays: But we don’t see that these problems are connected, so we just keep shooting single silver bullets at a “fragment” of the problem.

**TERRY IRWIN: So, we just keep aiming single solutions at what we think are single problems, but in reality, are pieces of a problem cluster and we can keep doing this for weeks or months or even years and we might put dents in the problem, but despite all the resources and energy we keep investing, many problems resist resolution.**

The silver bullets change which problem they point to.

Text displays: And, despite all these efforts and resources, the problems don’t get solved. Because we don’t see that they are all interconnected.

**TERRY IRWIN: Because we don’t see that these seemingly unrelated problems are connected to each other in complex ways.**

The silver bullets vanish. Yellow dashed lines connect the problems across the page.

Text displays: Not just within sectors – across all sectors.

**TERRY IRWIN: Within and across sectors. But wait—it gets worse.**

The word “Problem” is displayed in different sized circles and yellow dashed lines connect in every which way.

**TERRY IRWIN: These problems are also connected up and down systems levels. So, to understand these problems, we have to look ‘upstream’. Or, more precisely, up systems levels.**

Two new circles appear above the others with the words “Wicked problem” in each. They also have yellow dashed lines connecting to multiple problem bubbles.

**TERRY IRWIN: This is what we’re often dealing with: A complex web of interconnections and interdependencies across sectors and up and down systems levels. This web of connections (that involves both social and material interactions) is what keeps these problems stuck and extends their consequences into the social and environmental spheres. This is why we call them wicked.**

The image is the same.

Text displays: Solving familiar problems in our sector/industry with the tools & methodologies we already have.

Realizing some of our organizational problems are resisting resolution because they are cross-sectoral.

But the roots of most problems are connected to big, wicked problems at higher levels of scale.

**TERRY IRWIN: And here is how we think about the tools and approaches needed at the different levels: At the lower levels, we’re finding and resolving familiar problems in our own sector or industry, using familiar tools and methodologies. Sometimes it works and sometimes it doesn’t.**

**If we trace problems resisting resolution upstream— up to higher systems levels, we’re getting into territory in which collaboration across disciplinary divides has to happen (even though it’s difficult) and it requires tools and innovative, cross disciplinary approaches. These are new—but they do exist.**

**But at the level of a wicked problem we’re in new territory. There are very few existing tools and approaches for addressing these problems, and yet if we solve for a wicked problem upstream, the positive results quickly trickle downstream and solve for multiple, seemingly unrelated problems simultaneously. This is really the premise for Transition Design.**

**Now, I’ve diagrammed all this in a very simplistic way —in fact I’ve drawn them like we think of them: little separate boxes with their own separate issues. This type of compartmentalized thinking is actually part of the problem. Because this is actually more what it looks like.**

Circles/bubbles of different colours and sizes with the words “sector”, “problem”, “wicked problem” grow and shrink on the screen.

**TERRY IRWIN: Multiple sectors, industries and fields of all sizes represented by the white bubbles, with countless interconnected, interdependent problems overlapping them (the blue and orange bubbles).**

**And, it’s this invisible and unexamined web of interconnections and interdependencies across sectors and up and down systems levels that keeps these problems stuck. And—to complicate things even more, these problems are heating up and cooling off all the time.**

**It’s a bit like twinkle lights and the trick is learning to read complex systems to see which problem clusters are lighting up at any given moment. You get the idea.**

**So, in order to address these systems problems we first need a better understanding of systems themselves: how they behave and how they transition over time.**

**Essentially, we need to become students of systems. And systems are perhaps best explained by this old joke:**

A photo of tropical fish in the ocean. Two fish are shown with thought bubbles over them. One fish asks the other, “How’s the water?”. The second fish replies, “What water?”

Text displays: One thing fish know nothing about is water, since they have no anti-environment which would enable them to perceive the element they live in. (Marshall McLuhan, War and Peace in the Global Village)

**TERRY IRWIN: Two fish bump into each other and one says, “How’s the water?” and the other replies “what water?” One thing fish know nothing about is water, since they have no anti-environment which would enable them to perceive the element they live in.**

The photo of the fish remains.

Text displays: Systems are to us, as water is to fish...

**TERRY IRWIN: Systems are so ubiquitous and our interactions with them so pervasive, we don’t really see them, and therefore don’t understand them very well. Our work at the Transition Design Institute is concerned with how we learn to see systems and understand how they behave.**

A picture of an airport departure screen. A clustergram of coloured dots of varying sizes on a map.

Text displays: We live in a world of systems, nested within systems, nested within systems...

Transportation systems

**TERRY IRWIN: So, we live in a world of systems, nested within systems, nested within systems. There are transportation systems,**

Added to this image is a picture of a dam

Text displays: Infrastructure systems

**TERRY IRWIN: infrastructure systems,**

Added to this image are a picture of interconnected phone, wifi, and satellite icons; of traders at the New York Stock Exchange floor; of an office space; of pedestrians mostly in suits.

Text displays: Communications systems

Financial/economic systems

Rules and laws

Social systems

**TERRY IRWIN: financial, economic and communication systems, and ALL of these are permeated by cultural and disciplinary norms, laws and informal practices or ‘ways of doing things’.**

Video zooms out and image repeats.

Text displays: Socio-technical systems are always in transition.

**TERRY IRWIN: And together, all of these form what are known as socio-technical systems, which are in turn, situated within the natural world.**

Screen shows cave markings with the text “hunter-gatherers”, with an arrow pointing to a painting of a community working in the crops and the text “agrarian”, with an arrow pointing to a painting of slaves working in the crops and the text “feudalism”, with an arrow pointing to a painting of smoke stacks by the water and the text “industrialization”, with an arrow pointing to pictures of a dam, an airport departures display, pedestrians, road signs and the text “globalization”. with an arrow pointing to the words “the long-term future we’re transitioning toward”

Text displays: human societies are always transitioning...

**Terry Irwin: And these systems are always in transition because human societies are always in transition. But these transitions have been largely unintentional, full of “drift”, and we only understand their ramifications in hindsight—we call it history.**

**The question before us in the 21st century is whether we can intentionally transition our organizations, communities and entire societies toward more sustainable, equitable and desirable long-term futures...**

The pictures of a dam, an airport departures display, pedestrians, road signs and the text “globalization” have an arrow pointing to a word bubble.

Text displays: The long-term future we’re transitioning toward\*

\*isn’t looking so great

**Terry Irwin: ...because the long-term futures we are currently transitioning toward, aren’t necessarily the futures we want.**

The pictures of a dam, an airport departures display, pedestrians, road signs and the text “globalization are now tilting toward the right upper corner. The previous bubble is replaced by a new one with an arrow that displays “transition pathway”.

Text displays: The future we want

**TERRY IRWIN: But, Transition Design argues that we can intentionally change these transition trajectories toward futures that we do want. It sounds like a monumental undertaking.**

A graph detailing total confirmed COVID-19 cases by country is displayed with arrows to two bubbles.

Text displays: The future we want

The future we’re transitioning toward

**TERRY IRWIN: But recent history taught us something about transition trajectories: remember that all of these countries started at more or less the same place…**

3 arrows move out from the zero axis at around 60, 45, and 30 degrees. Text begins at zero axis and ends at the upper right quadrant.

Text displays: Small changes in the present result in big changes in the future.

**TERRY IRWIN: ...and we learned that because of systems dynamics, small changes in the present can make a BIG difference in where you end up in the future.**

**We think that addressing wicked problems is a strategy for intentionally shifting the transition trajectories of our organizations, cities and entire societies toward better, long-term futures.**

On the left beneath “The Problem” is a firing range target. On the right beneath “The Solution” is a silver bullet with the text “Silver bullet solution” and a Lone Ranger poster.

Text displays:

* single solution-to-a single-problem mindset
* Disciplinary expert-led problem solving
* Solutions are based upon problems solved before
* Aimed at satisfying a few select/elite groups
* Objective: quick, profitable, efficient solutions

**TERRY IRWIN: But, in order to design for sustainable societal transitions, we need to change the way we think about problems and solutions because that in itself is a wicked problem. We take a single-solution-to-a-single-problem approach that involves small groups of disciplinary experts solving problems as quickly and profitably as possible for relatively small, elite audiences. We’re looking for silver bullet solutions that hit very small targets.**

Beneath “The (Wicked) Problem” is a messy scratch mark with a photo of a group of men gesturing the Hitler salute. Beside that is the list of wicked problems displayed earlier in the presentation with an arrow pointed to “Every wicked problem is connected to others”. Beside that, beneath the text “The solution”, is a silver bullet and a Lone Ranger poster.

**TERRY IRWIN: But wicked problems are moving targets (or perhaps big, tangled messes is a better analogy), so a single, silver bullet solution won’t put a dent a wicked problem.**

A cluster of images previously displayed including, among others,

* A migrant climbing a border wall
* A man self-injecting on the street
* Smoke in front of the Washington Capitol
* Flooded homes
* A tent city
* Kim Kardashian posing in her closet

Text displayed: Every wicked problem is connected to other wicked problems. Note: this problem cluster is unique to the U.S. A Canadian cluster might look very different.

**TERRY IRWIN: In fact, it will probably make it worse because every wicked problem is connected to other wicked problems. So, traditionally conceived solutions address only tiny pieces of something much bigger. Let me show you what I mean.**

An illustrated person holding a magnifying glass looks at something on the ground. The person says, “What an interesting solvable problem”.

Text displayed: Traditional approaches to solving a problem (in Pittsburg)

What an interesting solvable problem!

Problem: Shortage of inhalers for children with asthma (in low-income neighborhoods)

**TERRY IRWIN: We find a problem, and we set about solving it the same way we’ve solved other similar problems, dozens of times before. Sometimes it works, but often it doesn’t. And it’s because we frame the problem in too small a context.**

An image of a news article is added to the previous screen.

Text displays: Solution: Smart inhaler project aims to reduce asthma attacks among LA’s low-income children

**TERRY IRWIN: So, we end up developing solutions that address symptoms of a much bigger problem. If we ask why childhood asthma in certain areas is on the rise, we have to expand the problem frame….**

The illustrated person is now standing upright with their hands up. The thing on the ground is now bigger than the person. There is a text bubble, “I might have underestimated it a bit!”

Text displays: Lack of access to healthcare in low-income neighborhoods

I might have underestimated it a bit!

**TERRY IRWIN: but doing this reveals a new, unexpected and more complex problem. And if we keep moving up systems levels….**

The illustrated person says, “Yikes” as the thing on the ground is now identified as a “wicked problem” and takes up most of the screen.

Text displays: Poor air quality in Pittsburg

Yikes!

**TERRY IRWIN: We inevitably arrive a genuine wicked problem that has manifested in place- and culture-specific ways…**

The illustrated person says “I’m going to need a LOT of help” as the wicked problems expands to a cluster of problems including racism, poverty, crime, rising cost of housing, steel industry lobby.

Text displays: I’m going to need a lot of help!

**TERRY IRWIN: ...and find that it is connected to a host of other wicked problems unique to that particular place.**

The cluster of problems fades and is replaced by an asthma inhaler.

Text displays: Solution

**TERRY IRWIN: So, when we compare our original solution to the root, wicked problem, we see that at best the solution is a band aid and at worst will prolong the problem resolution or actually make it worse.**

The cluster of problems is faded and we are presented with a new problem: capitalism

Text display: Paradigm-level wicked problem

Profit/growth imperative (capitalism)

**TERRY IRWIN: And of course, looming over most wicked problems are large societal structures like captialism which prioritizes growth and profit over the concerns of people and planet. This is what happens when we frame single problems in small contexts and create single solutions within disciplinary silos.**

Two images are presented: the poor air quality in Pittsburg cluster and an acupuncture map.

Text displays: The problems

* Ecologies of solutions, at multiple levels of scale
* Many experts co-designing with stakeholders
* Solutions are emergent and place/culture based
* Aimed at satisfying the needs of all stakeholders
* Objective: solutioning over long arcs of time to create equitable solutions that last

**TERRY IRWIN: So, my point is this: we need to think in terms of systems solutions. And acupuncture is a useful metaphor. If needles are solutions, we know intuitively that it will take multiple needles, situated in strategic (and often counterintuitive) places in the system repeatedly, over long periods of time, to transition that system back into health and balance. This is the mindset and practice we need to adopt when addressing wicked problems.**

Text displays: A systems approach to addressing systems problems

**TERRY IRWIN: And here is the good news. Although our socio-technical systems are riddled with wicked problems that are directing our transitions toward unsustainable futures…**

Text displays: Systemic solutions address multiple problems simultaneously

**TERRY IRWIN: ...these problems are rhizomatic and interdependent. And because of this interdependence, if we address any single wicked problem…**

Circles ripple outward

Text displays: The positive effects ripple throughout the entire system and solve for multiple problems simultaneously

**TERRY IRWIN: ...the positive effects ripple throughout the entire system, solving for multiple other problems simultaneously, and thereby changing the system’s transition trajectory**

Text displays: But to do this, we need to frame wicked problems within radically large problem contexts

* The past
* The present
* The future

**TERRY IRWIN: ...but to leverage these systems dynamics, we need to frame wicked problems within much larger contexts than we normally would and banish the thought of single solutions to single problems.**

**In the past few years, we’ve been working on an approach for framing wicked systems problems within radically large systems contexts…**

|  |  |  |
| --- | --- | --- |
| The past | The present | The future |
| How the problem evolved over multiple decades to become wicked | How the problem is manifesting in a particular place and who it is affecting now | What we want to transition toward in the long-term future (in which the problem has been resolved) |

**TERRY IRWIN: ...that include the past, the present and the future and we do this by working with the stakeholders connected to and affected by a particular wicked problem. We leverage the wisdom already within the system by gathering stakeholders’ knowledge about the problem and their hopes for its resolution.**

A series of systems maps

Text displays: A systems map of the problem and proposals for systemic solutions

How the problem evolved over multiple decades to become wicked

How the problem is manifesting in a particular place and who it is affecting now

What we want to transition toward in the long-term future (in which the problem has been resolved)

**TERRY IRWIN: Their responses are aggregated into a series of maps that together create a systemic understanding of the problem…**

Of the various systems maps, an acupuncture map enlarges

**TERRY IRWIN: ...that functions a bit like the acupuncture map, and helps us do two important things: FIRST, identify leverage points in the system; places where solutions have the potential to solve for multiple issues simultaneously and SECOND: to guide the solutioning process during the years-long transition toward problem resolution. I’m going to show you some tangible examples from a recent project as I walk you through just a FEW of the steps in the approach.**

Screen shots of articles from Fortune magazine and the Nasdaq Center

Link: <https://thecenter.nasdaq.org/vep/>

Text displays: The problem: a lack of funding for minority entrepreneurs

**TERRY IRWIN: For the past two years, we’ve worked with The Nasdaq Center and 8 other research partners to address the wicked problem of: A Lack of Funding for Minority Entrepreneurs in the U.S. and U.K. You can read more about the project on the NASDAQ Center website and watch 6 videos which go into more depth on each of these steps. The work involves bringing together as many stakeholder groups as possible who are connected to and affected by the wicked problem**

Text displays: The present

1. Mapping the problem   
   Integrates diverse stakeholder perspectives to create a shared understanding of the problem. Systems maps enable us to identify ‘zones of opportunity for’ systems interventions (solutions) that solve multiple issues simultaneously.

**TERRY IRWIN: In Step One, each group maps the myriad interconnected issues that make the problem wicked and keep it stuck, from their own point of view. We aggregate these different (often opposing) perspectives to form a systems view of the problem, which does two important things: first it facilitates a shared understanding of the problem among stakeholder groups and second, it enables us to identify zones of opportunity where solutions (or systems interventions) have the potential to solve for multiple issues simultaneously. But to do this, we need to understand the systems dynamics within the systems problem. Especially the speed of change that can be expected within different sectors of our socio-technical systems when solutions are implemented**

Text displays: Wicked problems are comprised of countless issues that always manifest in 5 archetypal sectors of society

1. Political, legal and governance issues
2. Business and economic issues
3. Infrastructure/technology/science issues
4. Social issue (how we think and behave can change slowly or quickly)
5. Environmental issues

Rate of change from slow to fast

1. Slow to change or rebound
2. Quicker to change or rebound

**TERRY IRWIN: Think of wicked problems of constellations of interconnected issues that arise within these 5 archetypal sectors of society. Any solution we implement is always situated in one of these sectors, whether we realize it or not. But because each sector has its own anatomy and speed at which change can happen and is connected in complex ways to the other sectors, these dynamics of change must be taken into consideration when designing solutions.**

A systems map showing systemic relations between societal sectors

Text displays: Dynamic of change with 5 societal sectors

**TERRY IRWIN: We created this diagram to help explain the relationships between societal sectors and how they affect the efficacy of solutions.**

Superimposed on the previous image is the word “solution” over several issues, with dashed lines connecting them

**TERRY IRWIN: Because of these systems dynamics we need to develop solution ecologies around a keystone solution such as policy. By ecology I mean solutions situated in other sectors that are interconnected in ways that amplify and scaffold each other.**

Link: [(PDF) DYNAMICS OF CHANGE WITHIN 5 SOCIETAL SECTORS | Terry Irwin - Academia.edu](https://www.academia.edu/58442619/DYNAMICS_OF_CHANGE_WITHIN_5_SOCIETAL_SECTORS) (English only)

Text displays: Systemic relations between societal sectors

Ignorance, prejudice, problematic beliefs in the social realm must be addressed in order for change to occur in the political/governance realm

Societal infrastructure is one of the root causes of environmental degradation retrofitting of these systems must begin in social > political > business sectors

Environmental damage happens rapidly but these systems are slow to regenerate. Policy can be a fast-paced intervention for positive change but requires social change to prompt it

**TERRY IRWIN: We think this suggests a new type of specialty—that of a systems ambassador whose role is to broker connections between projects and initiatives to form a solution cluster. For those who are interested, this diagram can be downloaded from my Academia.edu page.**

A systems map is zoomed in to a sub-section

Text displays: Responses from stakeholder listing multiple issues connected to the problem are aggregated into a multi-perspective systems map

**TERRY IRWIN: This is a detail of the final problem map from the NASDAQ project. As you can see, it was very large and aggregated all stakeholder perspectives about The Lack of Funding for Minority Entrepreneurs. The solid boxes are what we call emergent themes—categories suggested by the data, around which we cluster similar stakeholder responses. Here you see that all stakeholder groups cited a lack of access to social capital as a key issue connected to the problem.**

The systems map zooms to another sub-section

Text displays: ...and preserves the unedited voices of the stakeholders themselves.

**TERRY IRWIN: A second and unsurprising problem category was Racism and Otherness. Because responses are coded by stakeholder group and unedited, the map provides valuable insight to each group’s perspective on the problem, but it also shows us where there is consensus on an issue, across stakeholder groups**

Text displays: Themes that emerged in stakeholder problem mapping

* Social issues themes
* Political/legal issues themes
* Business/economic issues themes
* Infrastructure/science/tech issues themes

**TERRY IRWIN: These are all of the categories from the problem map which provide a quick overview of the problem categories identified by the stakeholder groups, in each of the five societal sectors. By separating issues this way, it provides an early indication of the type of solution required in a particular sector.**

A small section of the systems map is enlarged highlighting the racism and otherness theme

Text displays: Discriminatory practices against minority entrepreneurs in infrastructural, business and political systems reinforce and amplify each other

**TERRY IRWIN: The map also enables us to identify feedback loops, a dynamic in which different issues connect, feed into, and amplify each other. Here we see how attitudes, cultural norms and systemic racism combine to affect discriminatory lending practices and metrics as well as laws, licensing, regulation and oversight.**

A systems map showing impacts of lack of data or skewed data across themes

Text displays: Seemingly small issues (such as lack of or skewed data) drive feedback loops that exacerbate a lack of funding for minority entrepreneurs.

**TERRY IRWIN: And here we see how the issue of a lack of or skewed data exacerbates problems in practically every area of venture capital and funding ecology. This is a good example of the surprises that emerge when we leverage the knowledge already within the system through stakeholder engagement. In this project every stakeholder group cited data as a keystone problem category.**

Advertisement for the initiative “Data for Good”.

Text displays: Seemingly small issues (such as a lack of or skewed data) drive feedback loops that exacerbate a lack of funding for minority entrepreneurs

**TERRY IRWIN: the results of our research led NASDAQ and JP Morgan to immediately launch an initiative called data for good to develop new, better metrics for funding, increased diligence and accuracy in recording results, and the elimination of legacy red lining practices in data analysis.**

Step 1, “mapping the problem”, is faded to highlight step 2.

Text displays: The present

Multiple stakeholders with conflicting agendas

1. Mapping the problem: integrates diverse stakeholder perspectives to create a shared understanding of the problem. Systems maps enable us to identify ‘zones of opportunity for’ systems interventions (solutions) that solve multiple issues simultaneously.
2. Mapping stakeholder relations: mapping the relations of conflict between stakeholder groups (barriers to problem resolution) and relations of alignment (where near-term solutions will have broad support) shows us where the low-hanging fruit in the system resides.

**TERRY IRWIN: After mapping the problem, Step 2 takes a closer look at the complex stakeholder emotions and relations that underly the problem and keep it stuck.**

Bubbles and icons display 7 stakeholder groups around the words “Wicked problem”

Text displays: Mutliple stakeholders with conflicting agendas

Wicked problem

* Engaged stakeholders
* Stakeholders with no voice
* Stakeholders most adversely affected
* Stakeholders with little power
* Indifferent stakeholders
* Powerful stakeholders
* Stakeholders benefitting from the problem
* Engaged stakeholders

**TERRY IRWIN: There are countless stakeholder groups connected to and affected by any wicked problem and these include human and non-human groups.**

The same image, but now red arrows appear between various stakeholder groups denoted. Text is also red.

Text displays: Relations of conflict and opposition combined with uneven power relations are barriers to problem resolution

**TERRY IRWIN: Part of what makes these problems wicked is the conflicting agendas among the stakeholder groups. Many times, one group’s fondest hope is another’s worst fear and these relations of conflict are often the unseen barriers to problem resolution.**

The same image, but now the arrows and text are green

Text displays: However there are always relations of affinity and alignment

The low hanging fruit in the system where solutions with broad stakeholder support can lead to quick wins

**TERRY IRWIN: but within any wicked problem we also find relations of affinity and agreement. They aren’t always obvious, but are they are the low hanging fruit in the system— they show us where we can begin working immediately, creating solutions with broad stakeholder support. This chalks up quick wins and builds bridges between stakeholder groups.**

The same image, but no additional text

**TERRY IRWIN: another key factor is understanding the uneven power relations among stakeholder groups and the way in which these imbalances undermine solutions. Every problem is different, but this diagram shows the stakeholder archetypes that we see in almost every wicked problem…**

Stakeholders ordered from those with little power and agency and most affected by the problem to those with a lot of power and agency and who are not affected by the problem

|  |  |
| --- | --- |
| Stakeholders | Description |
| Stakeholders with no voice | Other species without voice often adversely affected by wicked problems |
| Stakeholders most adversely affected | Group(s) most adversely affected; little power and agency |
| Stakeholders with little power | Group(s) who have little power and who may or may not care about the problem |
| Indifferent stakeholders | Group(s) who are indifferent to the problem but might be swayed to care (often remain invisible) |
| Engaged stakeholders | Group(s) who understand and care about problem resolution but may or may not have power and agency |
| Powerful stakeholders | Group(s) with power and agency who may or may not be interested in using it to address the problem |
| Stakeholders benefitting from the problem | Group(s) with the power who are benefitting from the problem and will thwart solutions in many sectors (especially) via political lobbies. Agendas are often hidden |

**TERRY IRWIN: ...and they can be plotted along a power continuum from little power and agency to a lot. Doing this reveals which groups are most adversely affected by the problem, which groups are lot, (and whether or not they care about it), which groups might have the agency and will to help resolve the problem, and most importantly: which groups are actually benefitting from the problem and how much power they have to thwart ANY attempt to resolve it. And finally, it reveals which groups are invisible because they have no voice or power or are simply indifferent to the problem.**

Text displays: Powerful groups’ fondest hopes are often the disadvantaged groups’ worst fears

**TERRY IRWIN: mapping these relations shows us where and why the problem is stuck and helps explain why solutions are failing**

**It also reveals strategies for building coalitions between key stakeholder groups that can disrupt entrenched power relations and open up opportunities for new and different interventions**

Photos of in-person workshops

Text display: Stakeholder groups looking for lines of opposition and alignment between their concerns/fears and hopes/desires about the water shortage = 1. getting to a shared understanding of the complexity of the problem, 2. realizing there is no single “silver bullet solution”.

**TERRY IRWIN: we have worked with stakeholders in both online and in-person workshops, with up to 80 people in multiple stakeholder groups**

Two problem map tables show themes on the y axis and stakeholders on the x axis. The first shows fear and concerns, the second shows hopes and desires

Text displays: Stakeholder fears and concerns

* Every stakeholder group cited problematic attitudes, beliefs and behaviors as contributing to the problem of a lack of funding minority entrepreneurs

Stakeholder hopes and desires

* Two areas of significance emerged within the context of stakeholder hopes and desire, relative to the problem
* All four groups were aligned in hoping that attitudes, beliefs and behaviors related to the problem would change
* And, that new and more equitable funding, lending and hiring practices, along with new metrics for evaluation would result

**TERRY IRWIN: and our analysis of the data clearly shows where stakeholders are in agreement or conflict and we can look for that low-hanging fruit in the system….**

The screen zooms in on the stakeholder hopes and desires problem map and accompanying text

**TERRY IRWIN: Here you see that this second step validated what stakeholders told us in step one: that there is an urgent need for better data and more equitable funding, lending and hiring practices. In mapping a system problem, this is the type of cross reference we look for that tells us we’ve found a keystone issue. Let’s move on to the next step.**

Text displays: The present

Multiple stakeholders with conflicting agendas

1. Mapping the problem: integrates diverse stakeholder perspectives to create a shared understanding of the problem. Systems maps enable us to identify ‘zones of opportunity for’ systems interventions (solutions) that solve multiple issues simultaneously.
2. Mapping stakeholder relations: mapping the relations of conflict between stakeholder groups (barriers to problem resolution) and relations of alignment (where near-term solutions will have broad support) shows us where the low-hanging fruit in the system resides.

**TERRY IRWIN: Once we’ve mapped the problem and its complex stakeholder relations, we next extend the problem frame into the distant past…**

Text displays: The past

1. Mapping the historical evolution of the problem: reveals the historic “roots” of the problem; how multiple issues evolved and combined over long arcs of time to form the problem. This reveals insights from the past that can inform solutions in the present.

**TERRY IRWIN: to understand how the problem evolved over the course of multiple decades to become wicked.**

A systems map shows the historical evolution of the perpetual lack of funding flowing to minority entrepreneurs

**TERRY IRWIN: The systems map that emerges shows the historic roots of the problem which always reveals insights from the past that should inform solutions in the present but as we know, this rarely happens because we just keep repeating the mistakes from the past**

Text displays: The past

1. Mapping the historical evolution of the problem: reveals the historic “roots” of the problem; how multiple issues evolved and combined over long arcs of time to form the problem. This reveals insights from the past that can inform solutions in the present.

**TERRY IRWIN: After mapping the problem’s historic evolution, we next ask stakeholders to think deeply and creatively about the future…**

An arrow with the text “Transition pathway to the future” point to a cloud with the text “Long-term future visions (of futures we want)

Text displays: The future

1. Future visioning: Helps stakeholders transcend their differences in the present by co-creating long-term visions of a future they want. Enables us to identify common ground that can inform solutions in the present.

**TERRY IRWIN: ...by asking what they want to transition toward. Here, groups co-create visions of long-term futures in which the problem has been resolved and everyday life has become more equitable, sustainable and desirable. When stakeholder groups glimpse a future on which they more or less agree, it helps them transcend their differences in the present and work together toward that common future. Stakeholder visions become a database of ideas about the future that can inform tangible, systems solutioning in the present.**

Six systems maps represent six regions.

Text displays: Stakeholder visions of the long-term future in which the problem has been resolved. Household, neighborhood, city, region, nation, planet

**TERRY IRWIN: We ask stakeholders to image the future within the context of everyday life, at 6 different levels of scale: The household, the neighborhood, the city, region, nation and planet. Their perspectives are aggregated into a large future visions map that resembles the problem map from step one...**

The systems map moves around to momentarily focus on a different theme

**TERRY IRWIN: where unedited stakeholder responses are clustered around emergent vision categories these maps not only provide a vivid picture of the future, at different levels of scale but also contain countless concepts for solutions that can be implemented in the present because EACH response is coded to a SPECIFIC stakeholder group, we can easily see where stakeholder visions are in alignment and we ALWAYS see more alignment than differences among stakeholder visions…**

Emergent, future-based stakeholder narratives

**TERRY IRWIN: Future visions from the NASDAQ project fell into 3 distinct categories: visions that centered around improving the overall quality of life, visions related to entrepreneurship and funding equity and visions that contained tangible solutions ideas that could be used in the present. Because time is short, I’m going to skip the next step which is about designing for the years-long transition toward the desired future and skip to the last and most important step:**

A problem map and the words “Long-term future visions” point to an acupuncture map

Text displays: Designing ecologies of systems solutions (for wicked problems)

The problem map tells us where to situate solutions

The vision ensure solutions are also steps toward the desired future

**TERRY IRWIN: Designing entire ecologies of systems solutions to address a wicked problem. This differs from traditional problem-solving approaches because these solution clusters are informed by both the present and the future, we developed a Solutions Matrix which challenges people to develop DIVERSE solution ecologies**

A blank table lists societal sectors from the problem map on the vertical axis and challenges stakeholders to think about where interventions should be.

Text displays: The issues that form the problem in the present

The future we want to transition toward: Long-term future visions

**TERRY IRWIN: The vertical axis corresponds to the societal sectors from the problem map, and challenges stakeholders to think specifically about where interventions should be situated. The categories in the horizontal axis correspond to the levels of everyday life that were used in the visioning exercise. This challenges stakeholders to think about the level of scale at which a solution would be most appropriate and effective.**

Example solutions matrix

**TERRY IRWIN: We developed this teaching example, working with the wicked problem of COVID-19 in the U.S. The solution ecology is comprised of VERY diverse solution proposals in order to address as many key issues as possible.**

**We began building the cluster with these 3 solution categories: 1) solutions that address deforestation and the origins of zoonotic diseases, 2) solutions that increase self-sufficiency in households and neighborhoods during a pandemic, and 3) solutions that address the economic vulnerability caused by the pandemic. All of these issues and many more are part of the larger wicked problem. Note that specific solutions have been situated in different sectors at different levels of scale and that the concepts are different yet complementary. This is a skill that needs to be developed when designing systems interventions.**

**Once we developed a foundation cluster (that can include both new and existing projects and initiatives), we added the others to create a large solution cluster that populated all 5 societal sectors, at 6 levels of scale. It’s important to say that a group like yours might begin this process with a keystone policy concept, then scaffold it with multiple other solutions.**

The screen zooms in on the matrix to show arrows linking different boxes

**TERRY IRWIN: So, notice that in this matrix the connections between projects have been explained and are as important as the solutions themselves because only a solution cluster like this will have enough traction to de-stabilize the wicked problem and jumpstart the transition toward its resolution.**

**OK, I’m out of time but I want to leave you with two final thoughts. The first is this: the approach I’ve outlined here is not a linear, one-off process. Addressing a wicked problem is not like running a sprint, it’s like running a marathon or a relay race…**

Text displays: A cyclical (not linear) approach...

1. Problem mapping
2. Future visioning
3. System solutioning

**TERRY IRWIN: ...it’s an ongoing cycle of problem mapping, future-visioning and systems solutioning. Then—we’re waiting to see how the system responds to our interventions.**

Text displayed: Defining metrics for success should also leverage the knowledge and experience within the system...

Metrics for success

* Engaged stakeholders
* Stakeholders with no voice
* Stakeholders most adversely affected
* Stakeholders with little power
* Indifferent stakeholders
* Powerful stakeholders
* Stakeholders benefitting from the problem
* Engaged stakeholders

**TERRY IRWIN: The last thing I’ll say is that we think the accepted way of establishing metrics for success doesn’t work very well when it comes to wicked problems. It usually involves small groups of experts defining narrow parameters that are imposed on a system comprised of diverse stakeholders who will continue to have conflicting agendas, needs and ideas of what success looks like.**

**So, we’re working to add another step to the approach in which each stakeholder group defines what successful resolution of the problem would look like in the near term (remember they already defined it in the long-term in the visioning exercise).**

The screen displays screenshots of the speaker’s website.

Text displays: Thank you

[Tirwin@andrew.cmu.edu](mailto:Tirwin@andrew.cmu.edu)

<https://transitiondesignseminarcmu.net>

**TERRY IRWIN: OK, that’s it. There is a lot more to say about this approach, so for those who are interested, you can find more information on our Transition Design Seminar website that has readings and other downloadable materials. And everything we’ve written is up on my academia.edu website. Thank You.**