

# EXPLORING SYSTEMS CHANGE: AN ACCESSIBLE, ACTION-ORIENTED FRAMEWORK



*Prepared by Jewlya Lynn, PolicySolve, August 2022, updated February 2023*

*This framework seeks to bridge across multiple strands of systems thinking and complexity theory and practice. It is focused primarily on the notion of disrupting our current thinking about intractable problems to discover transformative new ways to act. It is not comprehensive – there are many other excellent models and frameworks to tap into, some of which will be offered as resources in this document. This write-up is adapted from materials initially developed in 2022 by Jewlya Lynn at [PolicySolve](#) for the nuclear weapons threat reduction field and delivered as part of a training through [N Square](#).*

## An Overview of the Systems Framework

Systems thinking is a mindset and a set of tools. It helps us to look more deeply at the complex issues facing society today. It helps us **explore the deeply interconnected, messy, unpredictable nature** of the human and environmental systems we need to influence to solve our greatest problems. Systems thinking is a tool for understanding and for identifying new ways to act. It helps us make sense of patterns from the past, unpack the current context, and explore how to drive change into the future. By discovering, understanding, and acting on dynamics in a system that are causing problematic outcomes, we have the potential to significantly improve the world.

Systems thinking is also the tool of systems change. **Systems change is not a path to a specific destination.** Rather, it is a process, as systems will always be in flux, dynamically shifting. Using systems thinking and its many approaches, we can help a system reorient toward better outcomes and support changes to emerge from within systems. This emergent, dynamic, and ongoing process of changing systems is part of why systems thinking is also about being experimental, listening to what is happening, making sense of the changes, and iterating and adapting.



Prepared by Jewlya Lynn with PolicySolve, based on content she created for [N Square's Systems Trainings](#) (2022). This content is being shared subject to a Creative Commons Attribution-ShareAlike license 3.0 (CC BY-SA 3.0 US).

## The Systems Framework

Systems change frameworks are one of the central tools of systems thinking, and there are many different frameworks out there. Each one offers us a mental model for understanding the complex systems we are working within and trying to influence.

Many systems frameworks use an iceberg model, a visual that explains how important aspects of a system are hidden from view. In practice, however, many structures, dynamics, and rules of the system are not hidden. They are driving the outcomes of the system, problematic or good, while sitting in plain sight. This framework honors these visible system dynamics while also exploring what is hidden underneath and how the larger context influences both (historical context, interconnected systems, and future context).

The power of systems thinking is **not just to look for what is hidden, but to bring new ways of understanding what is already visible** and make sense of how these visible dynamics interact with the hidden dynamics and each other to drive the outcomes of the system.

*Figure 1. A new iceberg of systems change – using context to make sense of the system*



Let’s explore these five aspects of a system:



*The Face of the System:* Systems are the structures that lie behind a set of issues and their associated institutions and actors. Sometimes the issue is defined as a specific societal problem (e.g., poverty) other times as a function of society (e.g., education). These issues are talked about, defined, and described publicly in many different ways. Often there are competing storylines and competing “facts” when evidence is collected, analyzed, and interpreted by different actors.



[Visible Systems Dynamics](#). Systems dynamics are often visualized and categorized in order to make sense of the system. Systems maps, for example, might include a mix of behaviors in the system, beliefs, power dynamics, information sharing, goals, rules and norms, and interdependencies of the system. These “visible systems dynamics” collectively drive the outcomes of the system. Some dynamics might be new, others well established and hard to change. Some might be very visible, and others might require some investigation to make them more visible.



[Hidden System Dynamics](#). A set of hidden dynamics (myths, metaphors, and mental models) are steadily and often invisibly influencing the visible dynamics of a system. Different actors understand and overly simplify the system using various sets of myths and metaphors (often in conflict with other sets also in the system). These are further influenced by the mental models each actor brings that cut across many issues. Collectively, this combination of unquestioned dynamics limits our ability to understand each other, think broadly about the system, and explore a wide variety of solutions.



[Context: Interconnected Systems](#). Systems cannot be cleanly “bound”—any system that we seek to understand will be influenced by other, often distant systems. Often the larger system we’re talking about is composed of many smaller systems, including fields of actors working together to influence the larger issue system. This interconnection of systems occurs across geographies, issue areas, and governance levels. Many of these interconnected systems are influenced by similar visible dynamics (e.g. how power functions or core beliefs) along with myths, metaphors, and mental models.



[Context: The Past and The Future](#). Systems are also not a single point in time. You cannot understand how and why a system behaves without looking at how patterns have emerged over time and how the system is protecting itself. You cannot change a system in ways that will lead to positive outcomes without attending to how its future context will be significantly different than the context today, and unpredictably so.

[Action: From thinking to influencing change](#). Systems thinking is also not an end in and of itself - it is a necessary foundation for **changing complex, dynamic systems for the better**. Systems change is about discovering somewhere worth going and then finding, supporting, and riding waves of interconnected change over time. It is about balancing acting with listening, making sense of what is happening in the system, discovering where to act, and adapting in response to where the next best opportunities can be found. The final section of this guide moves from concepts into practical ways to take experimental, adaptive action to change a system.

## Using the Guide

Feel free to move between sections, beginning and going wherever you wish. The sections are linked in the introductory paragraphs above. (Note: there is no section on the face of the system as this is what we see now, not our systemic view.) For some, digging into hidden dynamics is an exciting entry, while

others are ready to envision different futures for the system. You may even choose to go straight to planning systems change, using the prior sections as tools for the planning phase with partners.

## Going Deeper: Visible Systems Dynamics



**Visible systems dynamics** are the most observable dynamics in the system. They are **how a system behaves today**, including the interdependent nature of many dynamics, where one dynamic can influence the direction and intensity of another. Understanding a system as a series of interdependent dynamics, rather than focusing on actors, institutions, or tangible/physical assets, helps to discover why the system produces the outcomes it does and where you might want to intervene.

Systems are often first understood by identifying the most tangible parts: the actors, the institutions, and other infrastructure. Yet, the outcomes of the system are not just driven by these assets. They are the result of many different behaviors and other dynamics that limit or enable how the tangible parts of the system are deployed. Here we focus on these dynamics, recognizing they are driven by the actors in the system, and the actors in the system are also constrained by hidden dynamics and context of the system, which we will explore later.

*Table 1. Six visible systems dynamics that collectively drive the outcomes of the system*

| Dynamic                                          | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Examples                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>The rules and norms (formal and informal)</b> | <p>The rules and norms of the system are the set of <b>laws, regulations, standards, documented expectations, and unspoken expectations</b> that constrain the other dynamics of the system.</p> <p>Many of our interventions to change systems are focused on the rules: they are tangible, often can be changed, and are very visible. Yet, changing a single rule rarely results in significant systemic change. The system will often work around or bounce back to its status quo if other parts of the system are not also changed.</p> | <ul style="list-style-type: none"><li>• Air quality standards</li><li>• Voting rules in global governance institutions</li><li>• Long-held norms about how negotiations work, who needs to be at the table, and what happens by staff before decision-makers sit down</li><li>• Constraints on actors and their roles - expectations about how they will and won't behave including in relationship to each other</li></ul> |

| Dynamic                               | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Examples                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Information flow (and feedback loops) | <p>Information flow includes the structure by which information flows, <b>to whom, what types of information, and how quickly it flows</b>. Equally important is where information does not flow. Information flow is a <b>necessary part of feedback loops</b> in the system, and who receives the information, who can act on it, and what is received can influence other system dynamics.</p> <p>Interventions that change the information flow can help the system to address problems as they arise, make visible how the system is operating (including when it is in conflict with stated goals or values), and even shift power dynamics.</p> | <ul style="list-style-type: none"> <li>• Requirements for public input before rule changes happen, and specificity on what information is provided, collected, and how it's used</li> <li>• Release of declassified documents</li> <li>• Public hearings and closed-door hearings where decision-makers receive new information</li> <li>• Release of information about lobbying contacts or financial donations</li> </ul>                                                                                |
| Power and decision-making             | <p>Every system has actors and institutions that <b>hold power over critical decisions</b>, sometimes formally (an elected decision-maker or decision-making body) other times informally (e.g. the power of a lobbyist).</p> <p>These decision-makers often also hold power over the decisions that could help the system to change. Changing who sits in existing seats of power is often an appealing intervention. Without other types of change, however, the decision-maker may find themselves too constrained by the system to significantly affect it.</p>                                                                                    | <ul style="list-style-type: none"> <li>• Changing rules related to how public input is used</li> <li>• Changes in a specific political party's elections process (e.g. shift from caucus to primary)</li> <li>• Changing which actors sit in which decision-making seats</li> <li>• Eliminating seats (e.g. getting rid of an executive branch office)</li> <li>• Failing to fill seats with formally appointed officials (allowing unappointed officials to fill functions and make decisions)</li> </ul> |

| Dynamic             | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Examples                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Goals of the system | <p>While a system may have begun with a specific overarching goal, over time many different smaller goals have emerged, <b>goals that are being actively pursued by different parts of the system</b>. These goals may be in conflict with each other, or may complement and advance toward an overall system goal. Notably, goals here are not what people say the system does, but rather what it actually does.</p> <p>Shifting the goals of a system, which often requires tapping into power at the top of the system, can ripple throughout the system changing other dynamics. Yet, it is not enough to change the goal and associated rules of the system. How new rules are implemented, by whom, and with what resources and feedback loops may also need to be influenced.</p> | <ul style="list-style-type: none"> <li>• In the education system, the stated goals focus on education of children, educational outcomes, preparation of a modern workforce, etc.</li> <li>• The unstated goals (revealed during the pandemic) are childcare, allowing workers to sustain their roles in the economic system</li> </ul>                                                                                                                                   |
| Driving Beliefs     | <p>Many systems have <b>a set of beliefs that the system was built upon</b> that are widely understood and acknowledged, even if many actors no longer believe in them. The structure, processes, and power within the system can protect changes that interfere with these beliefs, helping to maintain them.</p> <p>Altering these beliefs (or changing where the beliefs show up in the system, and among what roles and positions of power) can significantly change the system, particularly when the change is structural and systemic, happening within places of power in the system.</p>                                                                                                                                                                                         | <p>Example of competing beliefs that affect how a system functions:</p> <ul style="list-style-type: none"> <li>• People who have committed crimes can be rehabilitated and that should be a primary purpose of the criminal justice system</li> <li>• We can prevent crime by having sufficiently harsh sentences</li> <li>• Most crime is the result of systemic failures and needs to be prevented by going upstream (education, poverty elimination, etc.)</li> </ul> |

| Dynamic            | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Examples                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Inter-dependencies | <p>Interdependencies are one of the core concepts of systems thinking. Different parts of the structure, dynamics, and actors are <b>influenced consistently by others</b>. Strengthening, weakening, or changing any one part of the system will <b>ripple through the system</b>, often in unpredictable ways.</p> <p>Changing how different parts of the system are influenced by each other can include breaking a problematic relationship or building a new one.</p> <p>Sometimes systems have virtuous cycles, where two dynamics are mutually reinforcing each other, leading to positive outcomes. Sometimes systems have vicious cycles, where one problem causes another, which strengthens the first. Finding and disrupting these interdependencies can be a powerful change to the system.</p> | <ul style="list-style-type: none"> <li>• Within a system, an example of interdependencies might be seen in the extent to which a rule is enforced (e.g. housing codes) having direct influence on the behavior of an actor with power (e.g. landlords).</li> <li>• Between systems, an example of interdependencies can be seen in the relationship between forced labor and overconsumption of natural resources. Both are insufficiently regulated and enforced economic actions, often occurring in the same industries, geographies, supply chains, and specific companies. As a result, changing one system can have a direct influence on the other.</li> </ul> |

These types of visible dynamics have been documented and explored elsewhere, with a mix of similar and different jargon. Interested in learning more?

For the classic description of systems leverage points, with these dynamics and more,, see Donella Meadows' [Leverage Points: Places to Intervene in a System](#)

For an accessible, deep and thoughtful exploration of systems dynamics, check out: [Putting the Systems Back in System Change](#)

# Going Deeper: Hidden Dynamics



**Myths, metaphors and mental models** are three hidden dynamics that deeply affect how we act on systemic problems and potential solutions. Each hidden dynamic plays a distinct role in systems thinking, and together they are powerful as stabilizing or disrupting tools.

Let's begin with clarity on why these three powerful hidden dynamics matter and how they relate to one another. **All three are part of how our minds simplify complexity.** They give us a way to make sense of things by relating them to other ideas that we know well, picking one aspect of the system to anchor on, applying ways of thinking we have used in other places.

Together, these three hidden dynamics **weave together to form a powerful, hard to disrupt foundation** that bounds our thinking and constrains how we understand the more visible parts of a system. From this foundation sprout ideas about the nature of the system, how it does function and should function, and the goals that it should have and should avoid.

The dynamics together **limit our discourse** - we have difficulty hearing and engaging with those who are anchored in a different set of myths, metaphors, and mental models. We find ourselves unable to find common ground or even unable to make sense of how each other understands the system.

All three are also **culturally and historically based**. They are influenced not only by where you live, but by your culture, family experience, and the history of the system itself. This is part of why they are hard to question: they are grounded in who we are and how we have come to understand the broader world. In fact, the same myth or metaphor may be interpreted very differently by people from different cultures, leading to distinct ways of defining the problems and potential solutions.

Finally, all three of these hidden dynamics can be influenced by visible dynamics of the system. In fact, the ability to protect or change the myths, metaphors, and mental models in a system is a type of power over the system. The actors who can influence the hidden dynamics may or may not have formal power within the system, but their influence is tremendous. With this grounding in the three concepts, next we'll explore each one in more depth, including definitions, descriptions of impact, and examples.



## Myths – Our persistent, pervasive stories

The myths of any system help to define it, make it easier to understand, and bound the thinking of what is possible. Here, we are using the term “myth” to talk about **persistent deep stories for making sense of the world around us**. We often accept them as truths, and even more so as they persist over time, rarely interrogating them. Many myths are supported by evidence, but there is often compelling competing evidence as well. Others can be based in history, once true, but no longer as true. Myths are the weaving together and interpreting of facts in very specific ways (Shaw and Nerlich, 2015).

*“Partial truths or half-truths are often more insidious than total falsehoods. Total falsehoods can be easily exposed for what they are by citing exceptions to their claims. Hence, they are less likely to be accepted as the total truth. A partial truth, on the other hand, is plausible, because there is evidence to support it. And hence, it is easy to assume that it is the total truth.” [Samuel P. Huntington, 2020](#)*

**Myths can be deeply persuasive and mobilizing.** “Today, the systemic power of myth is brutally visible in extremist groups, from the heady theology of Islamic State’s tweets, videos, and essays, to the underpinnings of contemporary Neo-Nazism” (Saltmarshe, 2018). For this reason, they can be insidious and dangerous, or helpful and transformative. This is because myths “carry with them, often covertly and insidiously, natural ‘solutions’”. By doing so, they are constraining how we think about policy issues, most particularly true when the issue is abstract, complex, or intractable (Shaw and Nerlich, 2015).

Let’s explore a few competing myths, all of which have evidence to both support and refute them. Which myths do you believe? What do they tell you about the issue and how we need to act to address it?

|                                                      |                                                                                                                                   |
|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| <b>Public education</b>                              | Public education is accessible to everyone in our country.                                                                        |
| <a href="#">Want to know more about these myths?</a> | Student achievement has been deteriorating for decades.                                                                           |
|                                                      | The color line divides us all, nowhere more than in our schools.                                                                  |
| <b>The United States</b>                             | The US is a nation of immigrants.                                                                                                 |
| <a href="#">Want to know more about these myths?</a> | The US is a country whose identity is defined by commitment to a particular set of values and ideals set out in the constitution. |
| <b>Capitalism</b>                                    | Greed is a natural human instinct; it makes markets work.                                                                         |
| <a href="#">Want to know more about these myths?</a> | Corporations must be run to maximize value for shareholders.                                                                      |
| <b>Nuclear weapons</b>                               | Nuclear weapons have kept the peace for 77 years                                                                                  |

To explore the idea of naming and changing myths in order to change systems, check out the [Forum for the Future's blog on reimagining governance myths.](#)

## Metaphors - Comparing one thing to another

Metaphors are **figures of speech that make a comparison between two dissimilar things**. They are also one of the tools by which our brains make sense of the world – if I understand A, and A is like B, then I can make sense of B even though it's complex. Yet, though this helps us more quickly make sense of complexity, in reality, A isn't B. What happens when we use a metaphor as a way to make sense of a complex system? We lose nuance, specificity, and depth of understanding. **We “direct” our brains to see some things and miss others.**

Metaphors come in multiple forms, not just the pithy one-liners (e.g. life is a journey). A single word can have a powerful influence over how people attempt to solve problems, from how they gather information to inform their decisions to the decisions they make (Thibodeau & Boroditsy, 2011). Metaphors can also be core concepts within larger conceptual arguments, where a suggestion is made of a similarity without necessarily stating it directly. For example, climate deniers have routinely conceptualized and implied that science is no different than a religion or myth with phrases like, “climate creationists” and equating science to a “secular religion” (Nerlich, 2010).

In the systems change space, **metaphors can direct the language, beliefs, assumptions, potential behaviors, and constraints we bring to the table**. Metaphors evoke emotions, negative or positive. They give us a perception of something tangible when we're dealing with complex and intangible problems and systems. Metaphors can open up a vision for a new future or constrain our ability to see anything but the present. They can block change or enable it. A metaphor that is systemic in nature can even help us think systemically.

Specific to policy making, metaphors are critical tools for constructing belief systems, persuading decision-makers, and shaping public understanding of a problem, all of which lead to the types of policies that are deemed appropriate (Charteris-Black, 2011). A powerful metaphor can also persuade us that an issue is not a problem, and no action is required (Cohn, 1987), helping to reinforce the status quo.

Are you influenced by metaphors? Researchers would argue that you don't know - **the influence of a metaphorical frame is quite covert**. Many people do not recognize metaphors as part of what influences their decision, and will instead point to data, research, and “evidence” (often numerical) to explain their decision-making (Shaw and Nerlich, 2015).

Let's explore a few competing metaphors: what do they tell you about the issue? About how we need to act to address it?

|                               |                                             |                              |
|-------------------------------|---------------------------------------------|------------------------------|
| <i>A slum is...</i>           | ...a blight                                 | ...an ecosystem              |
| <i>Education is...</i>        | ...a gift                                   | ...nourishment for the brain |
| <i>Capitalism is...</i>       | ...a force of nature                        | ...a bacteria                |
| <i>Nuclear weapons are...</i> | ...a cancer spreading through human society | ...the mother of all bombs   |

Interested in going deeper into metaphors? UNHCR Innovation Service has a series of blogs that help us see how metaphors can be part of our systems change actions. Want to explore metaphors as a [persuasion tool](#)? Or understand how [metaphors are conveyed visually](#) as well as words? One of their blogs even helps think about the intersection of [metaphors and power](#).

## Mental models - our deeply held ways of understanding the world

**Mental models are our deeply held, deeply internal ways of understanding how the world** (or a particular part of the world) works. They contain a mix of ideas, images, and beliefs that ground us and feel familiar and comfortable (Senge, 1994). They can be influenced by our myths and metaphors, but often it is our myths and metaphors that are shaped by mental models, including helping us to communicate and protect those mental models.

Our mental models are often not specific to a given system, in the same way a myth or metaphor can be. However, **the context of the system we're working in and thinking about can "activate" a particular mental model we already hold**. Our mental models come from our society and culture, and can also be passed down as part of how we learn to understand the world from our family. They are reinforced or challenged by our experiences and historical experiences that have shaped our culture.

Systems thinking itself is a mental model. Our systemic understanding of a given problem is also a mental model. By creating a systems map or other visualization of a complex system, we are making visible to ourselves and others the mental models we hold, allowing us to challenge them and explore them more deeply (see Katie King, 2020's [story of changing her mental model](#) about a system).

Let's explore a few mental models and what they help us envision and what they constrain when we think about problems and solutions. Notice that unlike the previous examples, these are not specific to one system, but rather define how we think more broadly.

|                                |                                                    |
|--------------------------------|----------------------------------------------------|
| <i><b>Fairness</b></i>         | Fairness is important, even at great cost          |
| <i><b>Opportunity cost</b></i> | Doing one thing means not being able to do another |

|                                            |                                                                                                                          |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| <b><i>Compounding</i></b>                  | Ideas are more than the sum of their parts, new ideas have an exponential effect on learning rather than simply additive |
| <b><i>Scarcity</i></b>                     | When resources are limited, there will be conflict and competition                                                       |
| <b><i>Coercion</i></b>                     | Global security depends on coercion, rather than cooperation                                                             |
| <b><i>Mutually assured destruction</i></b> | The stronger two opponents become, the less likely they will be to destroy each other                                    |

To dig deep into mental models, check out this [guide from the FS Blog](#). It provides additional understanding of the concept and a list of 100 mental models to explore, organized by topic.

## Bringing the three hidden dynamics together

As we get further into understanding myths, metaphors, and mental models, it becomes clear how much they can bound our conversations, our problem definitions, and the solutions we consider appropriate. Let's practice this bounding ourselves.

Imagine you are faced with the problem that **some children are consistently failing to achieve in schools**. Now, imagine you have two stakeholders grounded in unquestioned and very different sets of hidden dynamics (myths, metaphors, and mental models), shown in the chart below.

- How might their definitions of the problem differ?
- What solutions would they advocate for?
- What would feel ridiculous or even unethical to one stakeholder, yet may feel necessary and critical to another?

### *An example of competing "hidden dynamics" within a system.*

|                                    | Hidden dynamics: Set 1                                                  | Hidden dynamics: Set 2                                                                                                                |
|------------------------------------|-------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| <b>Myth (the persistent story)</b> | Each learner is a separate individual, on their own learning journey    | What one is capable of achieving is defined not only by the individual, but also by their context and what others believe they can do |
| <b>Metaphor</b>                    | Children are receptacles for learning                                   | A school is a garden                                                                                                                  |
| <b>Mental Model</b>                | Opportunity cost:<br>Doing one thing means not being able to do another | Fairness:<br>Fairness is important, even at great cost                                                                                |

Want to explore the intersection more, specifically in the national defense space? See Dave Lyle's piece "[The Cognitive Domain: A Personal Theory of Power.](#)"

Want to go deep? This academic piece, "[Military Innovation as the Result of Mental Models of Technology](#)" analyzes mental models related to nuclear weapons and technology.

## Context: Before, Around, and in the Future



**Systems do not exist at a single point in time**, nor in isolation of the rest of the world. You cannot understand how and why a system behaves without looking at **how patterns have emerged over time** and how the system is protecting itself. You cannot understand **how the system is being pushed and pulled** without looking at other systems around it. You cannot change a system in ways that will lead to positive outcomes without attending to **how its future context will be significantly different** than the context today, and unpredictably so.

*"Yet we often design as if the current moment is the only one that matters. This approach is akin to assuming a ballerina can fly because we see a picture of her during the middle of a leap."* (unknown)

This quote has been floating around in the systems change space for some time. While authorship is unclear (do share if you know who said it first!), the meaning is not: **a system cannot be understood through a snapshot in time.**

In practice, it can be easy to get caught up in the messiness of what we are trying to change today when we're working in a complex system. It takes intentional effort to explore how today's system is the result of patterns and actions in the past, and from there, explore the relationship between the past, the present, and the future of the system (Figure 1).

**Figure 1. Understanding systems in context: past, present, and future**



Adapted from a framework in Boulton, Allen, and Bowman's Embracing Complexity

In the following sections, we will explore why looking backwards and all around a system helps in understanding the system in the present moment, and why to look to an unpredictable future as well.

## Looking Back: Learning from the Past

The visible and hidden dynamics in any complex system have **gradually developed from a rich, complicated history**. By exploring the stories of the past, we can understand more about these patterns and **how change has happened (or failed to happen)** over time. We can discover how the system protects itself from change as well as where fragility may exist.

*"Life must be understood backwards, but must be lived forward."* (Danish philosopher Søren Kierkegaard, 1843)

The dynamics of a system did not arise overnight. They are patterns that have emerged as a result of many different influences and events. Some of these patterns may be newer or easier to disrupt. Others may be persistent and difficult to change. Some may be the replacement that came about as an attempt to eliminate a pattern that was even more problematic. Others may be the unintended consequence of a previous attempt to influence the system.

Let's make sense of this by exploring an often used systems change metaphor – raising a child is a common way of helping people understand complex systems:

*"Engaging a complex system is more like raising a child. What fate would await your new baby if you decided to go linear and design a project plan setting out activities, assumptions, outputs, and outcomes for the next twenty years and then blindly followed it? Nothing good, probably. Instead, parents make it up as they go along. And so they should. Raising a child is iterative, an endless testing of assumptions about right and wrong, a constant adaptation to the evolving nature of the child and his or her relationship with their parents and others. Despite all the 'best practice' guides preying on the insecurity of new parents, child-rearing is devoid of any 'right way' of doing things. What really helps parents is experience (the second kid is usually easier), and the advice and reassurance of people who've been through it themselves—'mentoring' in management speak. Working in complex systems requires the same kind of iterative, collaborative, and flexible approach."*  
Duncan Green, *How Change Happens*, 2016

What these metaphors often fail to name is the impact of different types of historical context on how child is raised:

- Historically-based cultural expectations about how children should be raised;
- The personal history of the parents, including how they were parented;
- The history of the child, going back to nutrition and stress in the womb and through each moment of the child's life; and even

- Multi-generational trauma, as research has shown that the effects of trauma can be intergenerationally passed on through epigenetic mechanisms.

Let's pull this concept out of the home and into a community-level complex system. New research is showing that even the smallest differences in historical experience can shape current prejudiced behaviors, including how racism shows up in a community. For example:

*"Whites today who live in Southern counties that had high shares of slaves in 1860 are more likely to express racial resentment toward blacks and to oppose affirmative action than are whites who live in otherwise similar areas that had lower shares of slaves in 1860."* Acharya, Blackwell and Sen from [The political legacy of American slavery](#), 2016

The finding in this study is not simply a story of individual prejudices passed down, but instead is tied to a system of political and economic incentives and constraints that reinforce, decade by decade and generation by generation, racist norms and attitudes (Acharya, Blackwell and Sen, 2016). In other words, history is sustained over time through a mix of hidden dynamics (the myths, metaphors and mental models of racism) and more visible dynamics, such as how power is distributed and used, as well as the rules and norms of the system.

Now, let's look at this same concept of historical patterns at a global level. The systems we live with today can be the result of reinforcing feedback loops that began in the past and have grown in intensity over time, sometimes becoming more and more difficult to break. We see this in the way markets (when underregulated) reward winners and punish losers; the winners then have the resources to be more likely to "win" again, the losers are less able to win. As the imbalance grows, the difficulty of breaking the dynamic does as well. Understanding how a given state in a system may be resulting from (and reinforced by) these types of feedback loops over time provides a powerful understanding of where to act to disrupt.

You may notice across these three examples that we are identifying a mix of hidden dynamics (myths, metaphors, and mental models) that grow and persist over time along with a variety of visible systems dynamics (rules and norms, information flow, power and decision-making, goals, driving beliefs, and interdependencies).

Looking back to the past matters in part because the hidden dynamics of the system take a long time to become persistent and dominant. And, once they are, they can be very difficult to change. Humans cling tightly to their stories and mental models, and pass them down to others, generationally within families and communities, and also generationally within institutions and larger systems.

Want to explore more the value of paying attention to history in order to change systems? Visit [Dustin P. Studelska's blog post](#) that connects the past, present, and future.



## Making sense of history in order to change a system

Have you ever heard the phrase, “history is written by historians”? It is commonly used to remind us that there is no one history. Rather, each historian brings their own beliefs, assumptions, cultural context, and values and must choose what historical record to bring into a narrative, what to leave out, and how to reconcile information that is conflicting or unavailable.

In systems change, it is important to remember that there is no one history of a system. Understanding history through a systems change lens is about more than just the trends and analyzing data. It is inclusive of these types of “facts” while also being attentive to context, the patterns of behavior, and the hidden dynamics – the myths and metaphors of the system and where they came from and how they persisted. History, in a systems change context, includes investigating the myths and mental models that decision-makers were locked into along the way, and if and where they have shifted. It includes exploring how power dynamics have shifted over time, both formal power and hidden and informal power. It is about seeing where interdependencies formed within the system over time, and where they became weaker or are now absent. Ultimately, it’s about deep, rich stories informed by many different sources of insight.

It can be very useful to map the stories against the current system – to discover what you see in today’s system that was true 10 years ago, 20 years ago, from the beginning and to discover whether some patterns have broken over time, while others have persisted. Let’s dig into a couple types of systems dynamics and how investigating them over time helps with understanding a system.

### Exploring beliefs

From [The Systems Thinker](#) (an excellent website to visit and peruse) we are reminded that:

*“When a group consistently solves a problem in the same way, prioritizing the same options, what was once a conscious, careful choice has now become a persistent system pattern, even an unconsciously held belief about how the system should behave.”* Philip Ramsey, [Learning through differences](#)

This is critical to understand because beliefs are self-perpetuating. Once we believe something, we look for signals to reinforce that belief, we justify the belief with evidence, and we act on it again and again, making it seem incontrovertible. In other words, our history helps us to discover what aspects of our present are the result of making the same decisions again and again, the same reactions, until we cannot imagine another approach.

### Exploring power

History is often the story about winners and losers, about those with power, those without who gained it, those who lost it, etc. In a systems change context, we can look at who has had power to change the system and power to preserve the status quo; hidden power and visible power; power through direct authority over aspects of the system and power through movements and external pressure.

An analysis of when a system has changed over time might help us discover important things about change today related to power:

- Who are the likely allies or enemies to change?
- Who will listen to whom, or defer to whom when moments for change are happening?
- How have the relationships between actors with power, and between those with power and without, changed or preserved over time?

### Exploring critical moments

History also helps us understand the types of critical junctures in a system, the windows of opportunity to trigger significant changes. These windows can be created by failures, crises, changes in leadership, natural disasters, infusion of new resources or loss of resources, or even moments of intense conflict. Not all critical junctures lead to systemic changes – in fact, some systems react to these junctures by protecting the status quo in ways that make change increasingly difficult.

Finding the junctures is one part of looking at history; the second part is to find out what happened at the junctures. It isn't enough to read a recitation of "facts" about what happened to know its impact on the system. These types of critical moments can be understood in many different ways, depending on the perspective the "historian" (or storyteller) has on the system and the moment in time. For example, narratives about the history and impact of colonization have been shifting in recent years as historically marginalized voices have been more centered in how history is told, including utilizing their myths, metaphors, and mental models to explain what happened.

### Tying it all together

Discovering a system's historical patterns isn't a fact finding mission: it's a storytelling activity, listening for multiple histories and truths. Think about which stories about the past can help us discover patterns in the systems you care about today; how divergence in stories when told by very different storytellers can reveal something new; and how you might act on the information you're hearing. Listen for the ways in which beliefs emerge, solidify, and become unquestioned assumptions about the system. Listen for the patterns in how the system protects itself over time and when it has been disrupted and by whom.

Remember, systems thinking isn't just a set of tools. It is an opportunity to alter how we understand the nature of an issue, how we approach changing the issue, and how we see and engage with each other. Looking to the past with a systems lens is one of the ways we can transform our thinking, in part because we're listening for something new.

## Looking Around: Discovering Interconnections

Sometimes, systems change comes from finding powerful points of leverage from within the system. Other times, we need to find something outside the system: an influence, a catalyst, a force that can push and pull on the system to solve a problem otherwise unsolvable. The **interconnections between systems** are opportunities for action, and **making them visible helps us discover new ways to solve “wicked” problems.**

What do we mean here by interconnected systems? At its core, we are exploring the idea that **what happens within one system (e.g. education, global governance, corporate supply chains, hunger, poverty, nuclear weapons/security) is deeply affected by other systems.** These connections are important influences and potentially opportunities to change the system.

- The connections might be the result of rules that cut across systems or unintended consequences of rules, where one system is affecting another. For example, setting legal precedents related to human rights can help in setting legal precedents related to non-human rights.
- The connections might be the result of resource dependencies, where one system is absorbing resources that another system needs or making new resources available that can be tapped for the other system. For example, military spending within a country can constrain resources available for other types of domestic programs. On the other hand, military bases can be facilities that serve multiple purposes within a country, such as joint civilian and military airport facilities.
- The connections might be the result of sharing beliefs, metaphors, or mental models, where a shift in one system can ripple through another system. In the United States, we see similar myths about people of color showing up in many different systems, from education to healthcare to the criminal justice system.

Some systems are bridges between systems, such as how the system of human migration pathways functions as a bridge between the economic context in a sending country and the economic context of a receiving country. Interconnectivity can happen in many other ways. At its core, however, the concept is the idea that no issue is fully contained and when we overly focus within a specific, defined system we are no doubt losing visibility into why the system is behaving the way it is and how we might change it.

## Introducing the idea of wicked problems and interconnections

We face many different types of problems in our complex modern world. Some types of problems have been described as relatively “tame” – problems with clear goals, well defined rules of the road, and known solutions, though perhaps difficult to implement. These are not the problems you are most likely developing your systems thinking skills to address. Instead, the skills of a systems thinker are particularly well positioned to take on **wicked problems**.

### **Wicked problems have been defined as problems that cannot be solved with linear thinking**

– the problem itself lacks clearly defined boundaries and definition; the solutions are unknown and each attempt to solve the problem changes the nature of it, requiring a new understanding of the problem before another action can be tried (Rittel & Webber, 1974). Wicked problems are often described as difficult or impossible to solve, **lacking clarity in both aims and solutions**, and having real risks and costs to trying to solve them.

When this concept of a wicked problem is further defined as a larger society problem – a social or culturally driven issue that is rife with uncertainty, complexity, and value divergence – we find that the problems also share another characteristic in common: **interconnections with other significant (and often wicked) problems**:

*“Wicked problems manifest at multiple levels of scale (from the global level to that of our everyday lives), connect to myriad other wicked problems, and straddle institutional, disciplinary and even sectoral boundaries. However, traditional problem-solving approaches tend to frame and address problems entirely within disciplinary silos and/or domains of expertise. This approach is evident in most of our societal organization and infrastructure such as: “transport”, “economic development”, “health and public safety”, “energy”, “housing”, “education”, etc.. The solutions that arise out of these “single-solution-to-a- single-problem” approaches rarely resolve a wicked problem because they are often addressing a ‘symptom’ of a bigger, higher level problem.” from [The Transition Design Framework](#)*

Let’s explore an example. In 2015, the United Nations (UN) General Assembly adopted 17 Sustainable Development Goals (SDGs), ranging from No Poverty and Quality Education to Clean Water and Sanitation to Responsible Consumption and Production to Peace, Justice, and Strong Institutions. The goals even seek to improve life below water through conservation and sustainable use of our ocean resources. From the air to the land to the sea, from people to the environment, from technology to human experience, the goals cover a wide range of needs globally.

From the beginning, there was recognition that these goals are each tied to “**wicked problems**” facing the globe. This leads to tremendous complexity, as wicked problems must be solved through trial and error, and there is no end to the number of possible ways to solve them (and no evidence in advance of which is the best). Within a couple years, it also became clear to the UN and many working on the goals that they

“require an integrated approach that recognizes that these challenges – and their solutions – are interrelated” (United Nations, 2018). Perhaps even more significant, it became clear that:

*“The SDGs are highly interdependent on one another and the goals may result in conflicting interactions and diverging results. Significantly, concerns were observed regarding the success of balancing the objective of climate change mitigation, economic development, environmental sustainability and the social inclusion of human well-being.” Wong (2021)*

At its core, the SDGs are reminding us that solving one wicked problem risks making another one worse. They are interconnected not only in terms of having influence on each other – they are also interconnected in their outcomes.

For a short, accessible video about solving wicked problems in our modern information context, check out an [interview with Nancy Robert](#), author of Wicked Problems and Network Approaches to Resolution

For an exploration of how systems thinking helps us address wicked problems, check out [this blog](#) from Sitra, Finland’s Innovation Fund and home of many powerful futures and systems thinking projects and thought pieces.

## Examples of interconnectivity between complex systems

Using this frame of wicked problems, let’s explore examples of these interconnections and also bring ourselves back to the concepts of visible and hidden dynamics.

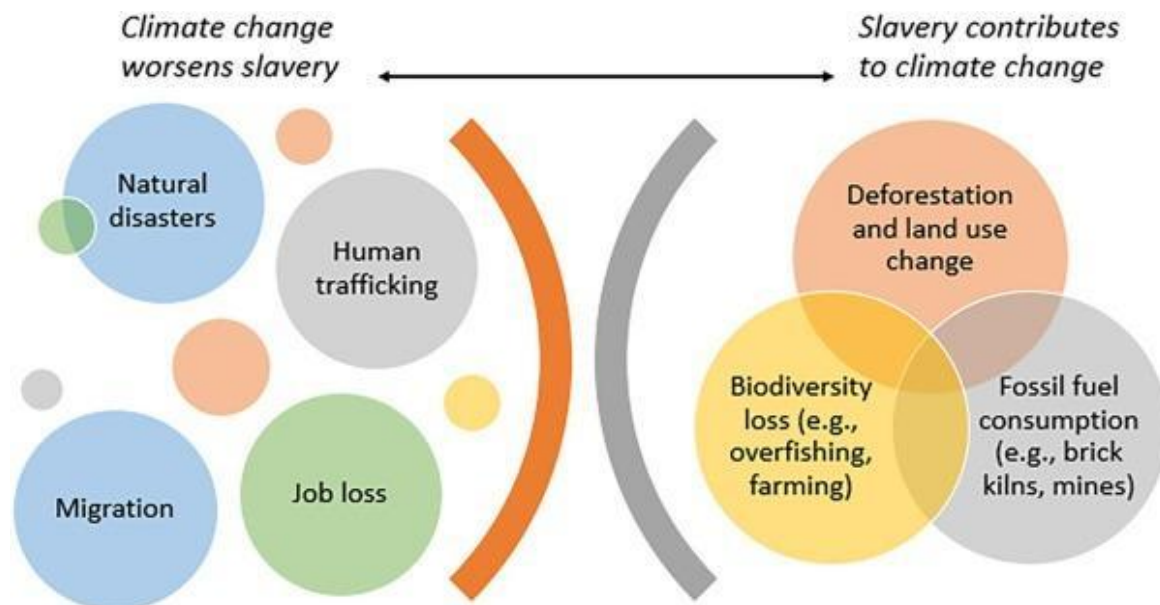
**Mental Models.** Many people hold the belief that corrupt governments lead to inequities in wealth. While that pattern is true, the pathway by which it happens is more complex and interconnected than is immediately visible. When a ruling group is not constrained by law or norms, and corruption is rampant, it has an impact on the mental models or concepts that people accept as natural and adopt in their own day to day interactions. In particular, it results in declining trust in each other and institutions. Trust in people beyond family and social groups is strongly related to economic growth, as economic exchanges of goods and services require trust. In this way, the mental models that arise in a society struggling with a systemic problem – government corruption – become the inhibitors to collective economic prosperity, all the way down to local level economic interactions (World Bank, 2015).

**Power over decisions and changing the rules.** A relatively recent trend in the climate change space is the litigation to pressure governments to respond to climate change using the framing of human rights. Historically, litigation tied to climate change had little focus on rights (though other forms of environmental activism used this frame). Recent trends have flipped this, leveraging decision-making venues and legal precedents that previously were not understood to be places where the climate change

battle could be fought. In 2019, a successful case forced the Dutch government to reduce greenhouse gas emissions, serving as the first case in the world where the government's legal duty to protect its citizens from the impact of climate change was established (Guruparan and Moynihan, 2021). In other words, the legal venues, legal precedents, and tools that have helped to advance human rights (one system) are being tapped into to advance climate action (a very different system).

**Enforcing the rules of a different system.** Environmentalists interested in slowing climate change are beginning to realize that one means to do so is to increase the enforcement, globally, of international laws against slavery. The link between slavery, environmental destruction, and climate change is researched and documented – it is a vicious cycle, where enslaved individuals are forced to work in ways that are advancing climate change, among other environmental harms, and the vulnerability created by climate impacts are putting more people in the position to become enslaved. The interconnections between the issues also mean that actions in either system could positively or negatively affect the other system (Bales & Sovacool, 2021).

Figure 2. The relationship between slavery and climate change\*



\* from [Bales & Sovacool \(2021\)](#)

In this case, the systems are defined separately based on their outcomes – for one, slavery, and for another, environmental harm and increased climate change. Yet, there is a set of shared structures and norms tied to the economic system that enables slavery and environmental destruction, allowing for action within one systemic context to advance action on multiple, distinctly different systemic goals. This example highlights the opportunity created by considering how the system you are seeking to influence may be leading to harms outside the ones you're prioritizing – you can expand your partners, your influence, potentially the power of your framing, as you attend to seemingly unrelated harms.

In our last example, another form of interconnectedness comes from the notion of **intersectionality as relates to equity and power**, which is the concept that multiple, interlocking systems of power affect those most marginalized in societies. It is the notion that all types of oppression, tied to many different identities, are linked. By using an intersectional approach, attempts to address inequities for one group are more likely to be successful and less likely to unintentionally worsen outcomes for another marginalized group.

## Implications for systems change

One of the first questions people ask as interconnectivity becomes increasingly visible is “does this mean I need to have expertise in all these related systems?” It’s a logical question – how can we find the interconnections without expertise? And beyond that, how can we influence them without power in those related systems?

**Working on interconnections is not about becoming a generalist with expertise across many systems. Rather, it is about rethinking who has a stake in your system and what other systems you may have a stake in.** It is about changing the tables you sit at and bringing new voices to your table. It may also be about changing your short-term goals, recognizing that shared action may need to prioritize changes in other systems along the way to having an impact on your system of interest.

Interconnectivity is an opportunity. And failing to consider it is a significant risk. When we cannot see those things that are helping to maintain the status quo from outside the system, we may intervene over and over only to find the system is able to bounce back.

# Looking Forward: Exploring Potential Futures

Thinking systemically and seeking to change systems is a practice in patience and living with uncertainty — systems change slowly and in unpredictable ways. Yet, it can be easy to forget this and design your approaches as if today's system is the one you are seeking to change. Instead, you can **use futures thinking to explore multiple possible futures and identify ways to act today that tap into the drivers of tomorrow.**

Understanding how to change a system can be a deep investigation of the system in the present moment, and an equally deep investigation of how we've arrived in that moment — the history of the system. It can include an exploration of the interconnected systems that surround it. In doing this work, we ground ourselves in the past and the complex present, but we risk forgetting something critical: Systems change takes time and systems will always continue to change.

As we decide when and where to intervene in a system, we have to hold central that **the future context will look very different than today. We cannot redesign systems based on the present or our new visions will be irrelevant before they can come to fruition.**

## Defining futures thinking

What do we mean here by *futures thinking*? At its core, it is a way of **making visible and critically examining many different possible futures.** It brings in tools and insights from multiple disciplines and helps us not to predict THE future, but rather engage with uncertainty and honor the complexity of looking toward many futures. It is a tool for divergent thinking, breaking the habit of looking for one clear path ahead.

You do not need to be a futurist to use futures thinking, nor do you need to know how to deploy scenario mapping or other foresight tools. Futures thinking is not unlike systems thinking: it is a mindset and way of approaching problems that can be strengthened with specific tools, but ultimately depends on how you approach the issue more than what tool you use.

## Methods and tools to support futures thinking

Futures thinking may not be the tools themselves, but there are tools that can be helpful! There are a variety of tools and techniques that help you think about the drivers of change that will shape the future as well as implications for present-day decisionmaking. Commonly used futures thinking methods include:

- The [Three Horizon's Framework](#) is a tool for mapping patterns of change over time including your current challenges, vision for the future, and a space for experimenting on how you can get to your desired future.
- [Horizon Scanning](#) is a systematic process for capturing and monitoring signs of change. The process identifies emerging issues that are on the periphery of current thinking and planning, and provides early warning of how trends and developments may lead to changes and create new challenges and opportunities around an issue.
- [Scenarios](#) are stories that describe multiple alternative futures that could emerge as a result of the drivers of change we see today. Scenarios are usually developed in sets and allow stakeholders to test their assumptions. There are many approaches to scenarios. A few intriguing case studies from the Institute for the Future can be found [here](#).
- In addition to larger methods, there are many different tools that can be deployed across a variety of settings. These include facilitative processes, ways of making sense of multiple sources of insight, ways of capturing stories about the future, etc. In addition to the analytical processes described above, there are also many different forms of art and storytelling that help us to understand the future, including through the work of [Afrofuturists](#) and [Indigenous Futurists](#).

Want to keep exploring the concepts of futures thinking and tools of foresight?

- The Organisation for Economic Co-operation and Development's (OECD) Strategic Foresight Unit has an excellent [intro page](#) with links to deeper information.
- To go deep into scenario approaches, check out [this article](#) by Andrew Curry and Wendy Schultz. Four distinctly different approaches are described starting on page 42.

## Why futures thinking is important to systems thinking

*"Futures practices help us take action in complex situations where the past is not a good guide to the future. This is typically the case when we want to bring about systems change."*

[From 10 Tools to Systems Change for a Zero Carbon World](#)

One of the frequent mistakes we often make in systems work is to **look at today's system and its context and then design an intervention in response, without considering how systemic change can take decades**. The context and shape of the system will look different, in small and potentially very big ways, by the time our systems change work has rippled out to have significant impact.

By employing futures thinking, we bring divergent thinking to how we understand the potential system of the future. Instead of mapping a pathway from today to the future we want, we can explore the many things that are already influencing the system, and may influence it in the future, and ask how we might

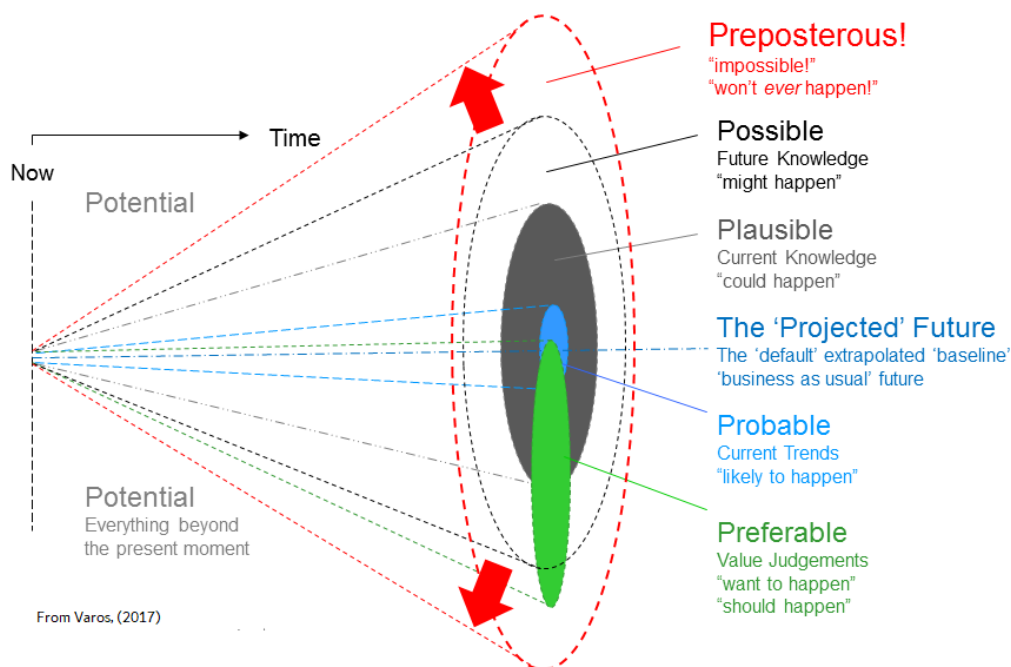
want to see the system shift in response. [Joseph Varos' Futures Cone](#) (Figure 2, next page) helps us to see the variability of the many futures ahead, and how we most often anchor on one, often the projected or preferable futures.

Futures thinking is not just about telling these future stories. It is also about looking for signals today of what might unfold in the future. Thinking systemically benefits from learning to both look to multiple futures and listen for signals of change that we can hear today. We may want to “ride a wave” of change that is pending in order to have greater impact. We may want to prepare to mitigate risks that could unfold depending on how the future unfolds. Perhaps we want to pause on a specific part of our work, pending greater clarity on what is driving the future and identifying the best ways to act given the shifting context.

#### A quick side exploration: How does FORECASTING relate to FORESIGHT?

The term forecasting is widely used, and can be confused with futures thinking and foresight. Governments and businesses often use forecasting tools to quantitatively understand multiple futures that could emerge. Foresight, in contrast, goes well beyond looking at hard data in an attempt to predict the future. It looks at drivers of change that are often more qualitative and difficult for a forecast to account for. A foresight process can, but does not need to, include quantitative data and use forecasting techniques as part of the process.

Figure 2. The Futures Cone



At its core, as you consider the role of the future in changing today, remember: **The system we envision and seek to advance will exist in a future we cannot predict. Our pathway to change cannot be linear, but instead must be adaptive and responsive as changes emerge from within and outside the system.**

### Implications/conclusion

Working on systems change is a combination of simplifying the complex to find points to act, honoring the complexity to make sense of how change is unfolding, and not getting caught up in today, but rather seeing the past, present, and future in relationship to each other. When we understand where patterns have come from, we can better imagine how to disrupt them or where they might be going. When we see how disruptions have occurred in the past, we can imagine potential future disruptions and how we might tap them. Futures thinking is a critical skill in systems thinking not for its own inherent value, but for how we can connect it to a larger understanding of a complex, dynamic system.

# From Systems Thinking to Systems Change

Learning about systems isn't why we're all here. We want to change them. Systems change is about **discovering somewhere worth going** and then finding, supporting, and riding waves of interconnected change over time. It is about **balancing acting with listening, making sense of what is happening** in the system, discovering where to act, and adapting in response to where the next best opportunities can be found.

*"Systems change aims to bring about lasting change by altering underlying structures which make the system operate in a particular way. These can include policies, routines, relationships, resources, power structures and values... It is a journey which can require a radical change in people's attitudes as well as in the ways people work."*

[Systems change: A guide to what it is and how to do it, 2015](#)

Systems change, distinct from systems thinking, is a practice of intentionally influencing a complex system by disrupting current dynamics or by replacing them with new ones.

In the systems change space, we can approach change in many different ways:

- **Sometimes we're prototyping**, acting in the lowest risk ways we can. Prototyping is a precursor, a safer moment where you can pre-think, test, and design in an environment that is safe for failure.
- **Sometimes we're taking small, exploratory actions** - poking, prodding, and discovering how the system reacts. For example, a first try at an unusual partnership, experimenting with a new way to frame the problem with key stakeholders or decision-makers, making visible something previously hidden, influencing the deployment of a small amount of dollars, etc.
- **Sometimes we're acting big**, perhaps because we have already taken exploratory actions and feel ready or perhaps because we've found an opportunity to act that demands a bigger intervention. The risks are higher, but we're confident enough in our understanding of the opportunity and the action needed that we're comfortable taking those risks. "Big" actions such as these are often deeply and broadly collaborative.
- **Sometimes we're scaling** something that is already working in one small part of the system (whether or not we were the ones responsible for earlier successes). Importantly, this is not about *replicating*, because no two parts of the system (or two systems) are identical; neither will any two interventions be the same. It is about adapting a successful strategy for the context(s) in which we now want to use it.

- **Sometimes we're protecting.** When the system is failing and change seems problematic, we might simply be protecting aspects of the system that we cannot (yet) afford to lose. This is particularly relevant when a systems change is likely to harm specific people or other parts of the system; and
- **Sometimes we're acting quickly regardless of the scale or type of change** because the moment is ripe - something has made the system fragile to influence and the opportunity won't last long.

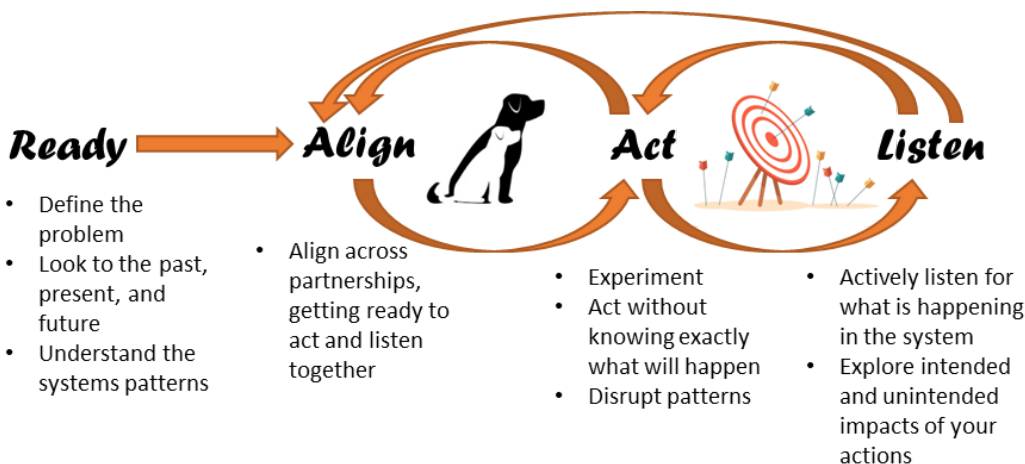
With these types of changes, we might aim to shift the visible dynamics of the system, tapping into or changing hidden dynamics—or we might use influences from *outside* the system to drive change within it. The most successful changes typically take on multiple targets, shifting more than one dynamic over time.

## Designing systems change experiments

If any of those types of change resonate, then your next step is to design how you'll seek to influence the system. In a typical planning process, we do some landscape analysis, define the problem, set a vision, and then we get into the nitty gritty: Our goals, strategic actions, objectives and any evidence we're making progress. We develop linear chains of outcome, e.g. theories of change or logic models, which help us articulate and interrogate assumptions about cause and effect.

This type of planning can be useful when tackling a straightforward problem, where much is predictable, cause-and-effect are linear, and external factors have a limited ability to influence the outcome. However this approach needs to be abandoned when we are designing for systemic change. Have you heard of the “Ready, Aim, Fire” model, where you get ready, carefully figure out what you're going to do, then act? Let's change that around. Instead of predicting where we're heading, let's get ready, get aligned with our partners (systems change is never a solo exercise!), take action, listen and make sense of what is happening, and iterate, iterate, iterate (Figure 1).

Figure 1. Giving up Ready, Aim, Fire to allow for rapid experimentation and iteration of systems change



## READY

*"A useful system perspective is sensitive to the fact that people hold various interpretations of situations, problems, and what can and ought to be done about them. Relaxing the assumption that systems exist objectively in the real world represents a big step forward. Progress comes from thinking about social problems in a systemic manner that does not privilege our biased perspectives."*

[Christian Seelos](#)

The prior sections in this systems thinking framework provide a guide to getting ready, including diagnosing problems and opportunities to act by understanding the visible and hidden dynamics; seeing how patterns have formed and sustained from the past into the present; looking around the system for outside influences; and looking to future for waves of change we might be able to ride. This discovery work prepares us to align and act. It also gives us a baseline description of the system to compare against as changes emerge. In this preparation process make sure you are grounded in:

- The idea that **there is no one perspective on a system**. Be open to the idea of multiple stories about what is happening in the system, what has happened, and what may happen in the future. Seek to avoid getting trapped by your understanding of the system.
- The reality that there are **objective constraints that exist within the system**. These constraints, whether related to resources or time delays or other seemingly intractable realities, are important to interrogate. Some may be more real than others.

### **You know you're READY** when you have a sense of:

- The problem(s) you're trying to solve for overall and why (the long-term vision you have for a better system and world);
  - The systems dynamics you're trying to influence;
  - The hidden dynamics, and whether you're also seeking to influence those;
- The history of the dynamics - patterns, what has reinforced them, what has been tried and failed, etc.;
- The potential futures ahead, and how the context may shift in ways that you can tap into;
- Where/how other systems are interconnected with the dynamics you want to influence, and whether to drive change from within your system or outside it; and
- Where energy for change is within the system, and the capacity among these potential or existing change agents.

## ALIGN

*“Designing intervention strategies in the comfort of one’s home office is obviously an inefficient practice, with close to zero probability of success. Instead, system work requires that we get close to systems, even uncomfortably close.” [Christian Seelos](#).*

Aligning before acting honors the fact that systems change is not a solo endeavor. Complex systems will shift meaningfully as a result of multiple actions, often led by different actors, aimed at the same long-term destination. **Aligning does not mean everyone has to agree on every action** and understand how it will move forward! Rather, it means we want to learn from and with each other, take action in partnership where it makes sense, be careful not to act against each other, and maintain awareness of who is taking which actions and when.

*“Complexity and systems thinking value self-organizing principles and **decentralized approaches**...Systems practices also work with **unpredictability** and **non-linearity** in understanding change and recognize that **relationships** are a key component and capacity in efforts.” [Tatiana Fraser and Juniper Glass, 2020](#)*

**You know you’re in ALIGNMENT** and ready to act in multiple decentralized ways when:

- You have connected with others who also want to change the system and established a common definition of the overall problem, a long-term vision you all agree is worth pursuing, and perhaps also a loose set of goals to pursue on the way to that vision;
- You have clarity on the constraints and capacities of the change agents working in alignment. Are they overwhelmed, siloed, or disconnected from resources? Do they have constraints on how they are allowed to act in the system? Are they credible? Who trusts them and turns to them? Who does not?
- You have a shared understanding that it is time to act, and are either ready to act together or ready to act in alignment.

## ACT

Now that you’re ready and aligned, with a clear sense of the problem, places to intervene, and a vision you’re headed for, it’s time to find the next right step. Not the best step or a perfect action. Something that is **right enough to be worth trying, and you feel confident isn’t wrong**.

You might put together a basic project plan around a specific action - this is helpful when multiple players are involved. **Do not, however, put together a multi-year, detailed plan**. Instead, identify what it will take to begin this work and what you might want to **listen for** in the system - both for shifts in context and early signals of positive or negative impact.

Avoid the tendency to plan a “pilot project” or other initial step that requires such a commitment of resources and reputation that it will be difficult to let go of if it doesn’t have the intended impact or you see early signals that it might not be the right action. Instead, ask yourself what a first step might look like for the type of pilot you’re envisioning and take that, pause, and decide whether to take another.

This level of **ambiguity can be very uncomfortable** for some people. It can result in a lot of fear, in coming up with many different negative scenarios about what will happen because we haven’t tried to articulate a single positive scenario. For example, we might ask ourselves questions like: What if the pressure we put on policymakers to act is timed poorly and we lose our credibility? What if the systems map we develop to make the system visible to those in it is partially wrong? How does that hurt our credibility? What if we fight against the current people in power and even worse actors take their place? What if we engage leaders from an outside system and their agenda conflicts with ours? Yet, ultimately if this type of fear wins, we fail to act and the system remains stuck.

### **You are ACTING on systems change when:**

- You are actively trying to influence the system, in ways small or large, that directly respond to what you’ve discovered with partners as you get READY and ALIGN;
- You are not overly invested in your actions - they are good ideas, the next right thing, and can be shifted as you observe their implementation and listen to the system; and
- You are not acting alone - even if the strategy is primarily one that you or your organization is implementing, you’re making the work visible to partners and intentionally maintaining alignment.

## **LISTEN**

When we’re deploying a project, an initiative, or an advocacy strategy, we often listen primarily for the most visible, trackable, and immediate impacts. How many people did we reach? Is there evidence of a shift in opinion among those reached? What actions are people taking in response? Was a policy adopted? Did implementation of a policy go as planned?

This type of listening is important and relevant, but also insufficient in systems change work. We are not just interested in the most direct effects of our work, but also the ripples through the system. We are interested in how the system is changing for reasons other than our actions, changes that might influence the viability of our strategies. We’re also interested in unintended harms we might be causing.

Effective systems listening is not just reporting on what you see. It’s investigating WHY these changes are happening and WHY they may matter in relation to the problem you’ve defined, the strategy you’re experimenting with, and the future you envision. It’s also not just about making sense, it’s about acting in

response by adapting. Engaging in listening *with* those you are aligning with is critical, as it prepares you more rapidly for the next round of aligned actions and brings more perspectives to the listening work.

Sometimes you will want to go further than sensemaking based on information you can relatively easily compile. Outcome harvesting, most significant change, contribution analysis, and process tracing are all ways of investigating cause-and-effect within complex, dynamic systems. When we do this intentionally, we are pushed outside our assumptions about why change is happening and can discover new pathways.

**You are LISTENING to the system when:**

- You have a regular cadence for pausing and reflecting - not just on your strategies, but on what is happening in the system more broadly;
- You are asking questions about why changes are happening, pushing well underneath the more obvious and visible dynamics;
  - You have a variety of inputs into these moment of reflection, including people who hold different perspectives on the system along with evidence of specific changes;
- You can see into the more hidden parts of the system, and over time you begin to uncover more and more about the system; and
  - You are steadily challenging and changing your assumptions about the system.

## Working with funders to change systems

A side note on working with funders (or *being* a funder). Many funders are as uncomfortable with ambiguity as we may be ourselves. Reporting requirements, metrics, agreed upon deliverables, or other structures can trap us in sticking with something that we already know isn't working or can't work in the current context.

If you're a funder, focus on listening to the system alongside your grantees and let that sensemaking **replace or at least supplement traditional metrics and reporting**. If you're a grantee, open up the conversation with your funder, let them see the black box of your systems change work and **seek to build trust in your process and eagerness to see your outcomes**, rather than accountability to a pre-planned set of deliverables. These shifts are difficult to make, but when they work, they can replace barriers created by inflexible funding with powerful new levers for change.

## Get inspired: Examples of systems change

Below are examples of well-documented systems change efforts that explicitly engage many different actors, carefully aligning motivations, in order to shift the visible and hidden dynamics of the systems.

**The Indian NGO Gram Vikas launched a systems change project, [MANTRA](#)**, in the 1990s that has now been adapted and repeated in 1,140 villages across 28 districts in the state of Odisha as well as in other countries. The program has two purposes:

1. Providing every household in a given village with piped drinking water and with its own toilet and bathing facilities; and
2. The less visible, but far more transformative, work to confront the problems of inequality and sustain the sanitation gains by changing social norms related to caste and gender.

This second part of MANTRA was designed in response to a diagnosis of a systems problem: sanitation projects in India were failing due to social dynamics, including beliefs about who deserved access to clean water and willingness to share water systems across castes. To solve for this dynamic, the systems change leaders experimented and developed an approach that uses multiple, carefully orchestrated actions that slowly shift social norms as the sanitation system is being planned, resourced, and built, including through requiring 100% buy-in for the program, creating multi-caste tables for decision-making, creating women's only decision-making tables as a space to develop leadership skills, and transitioning to cross-gender decision-making tables over time. Notice that across this example, they are changing (1) social norms; (2) myths related to caste and gender; (3) resource distribution for the sanitation system; (4) rules; and (5) power dynamics.

**The [Vermont Farm to School Network](#)** used a systems mapping process in 2014 with over 60 stakeholders to discover areas of leverage in the system. They had to make sense of a system that included 89,000 students, 7,338 farms, 334 schools and school districts, 251 cities and towns, 180 legislators, dozens of policies and programs that affect farm to school, hundreds of farms and non-profits and practitioners, and 15.5 million school meals served annually. In only 6 months, they developed a shared understanding of the system across stakeholder groups, clarity on where they were headed, and a set of high level goals - where they would aim their work. Then, they got to work using action committees that were charged with completing actions within six month timeframes, driving rapid action and iteration. They have been successful at changing many parts of the system, not the least of which include:

1. Rules, including how resources are distributed and who has access to them;
2. Information sharing, including generating and using new evidence about economic impact to change other dynamics in the system;
3. Power dynamics, specifically by formalizing new roles within the system that sustain the new direct of the system in local areas; and
4. Myths, by reframing hunger as an economic opportunity for the local agriculture system, offering a powerful and positive alternative to historically negative framing about hunger and poverty.

## Practical tools and resources

The previous sections include many of the tools and resources you need to do this work, particularly around getting ready and aligning. To help with planning action, listening, and adapting, consider using tools such as:



- [Prototyping](#), explained in a very accessible way by The U-School for Transformation;
- The Human Systems Dynamics Institute's [Strategic Adaptive Action](#) cycle and resources, helpful for both planning actions and listening/sensemaking as the system changes;
- [Story harvesting](#) practices that help us collectively make sense of what we're discovering;
- The [Emergent Learning](#) suite of facilitated practices to structure ongoing learning; and
- Exploring the [role of evaluation](#) as you seek insights about the impact of your systems change strategies.

## Implications/conclusion

Working on systems change is a combination of simplifying the complex to find points to act on, honoring the complexity to make sense of how change is unfolding, and not getting caught up in today, but rather seeing the past, present, and future in relationship to each other. When we understand where patterns have come from, we can better imagine how to disrupt them or where they might be going. When we see how disruptions have occurred in the past, we can imagine potential future disruptions and how we might tap them. Futures thinking is a critical skill in systems thinking not for its own inherent value, but for how we can connect it to a larger understanding of a complex, dynamic system.

## References

- Acharya, A., Blackwell, M., & Sen, M. (2016). The political legacy of American slavery. *The Journal of Politics*, 78(3), 621-641.
- Bales, K., & Sovacool, B. K. (2021). From forests to factories: How modern slavery deepens the crisis of climate change. *Energy Research & Social Science*, 77, 102096.
- Boulton, J. G., Allen, P. M., & Bowman, C. (2015). *Embracing complexity: Strategic perspectives for an age of turbulence*. OUP Oxford.
- Charteris-Black, J. (2011). *Politicians and rhetoric: The persuasive power of metaphor*. Springer.
- Cohn, J. (1987). Chapter in: Ruth Miller Elson. *Myths and mores in American Best Sellers, 1865–1965 (Modern American History*. New York: Garland. 1985. Pp. 380.
- Hines, A. (2020). When did it start? Origin of the foresight field. *World Futures Review*, 12(1), 4-11.
- Kumaravadivel Guruparan and Harriet Moynihan. 2021. Briefing Paper: Climate change and human rights-based strategic litigation. Chatham House.
- Lynn, J. (2022). N Square Systems Framework and accompanying training modules. N Square.
- Masini, E. B., & Gillwald, K. (1990). On futures studies and their societal context with particular focus on West Germany. *Technological Forecasting and Social Change*, 38(2), 187-199.
- Nerlich, B. (2010). 'Climategate': paradoxical metaphors and political paralysis. *Environmental values*, 19(4), 419-442.
- Nerlich, B. (2010). Metaphor and metonymy. *Historical pragmatics*, 193-215.
- Pradhan, P., Costa, L., Rybski, D., Lucht, W., & Kropp, J. P. (2017). A systematic study of sustainable development goal (SDG) interactions. *Earth's Future*, 5(11), 1169-1179.
- Ramsey, P. (2018). *Learning through Differences: Dilemma Theory in Action*. The Systems Thinker.
- Rittel, H. W., & Webber, M. M. (1974). Wicked problems. *Man-made Futures*, 26(1), 272-280.
- Saltmarshe, E. (2018). Using Story to Change Systems. *Stanford Social Innovation Review*.  
<https://doi.org/10.48558/4FVN-0333>
- Senge, P. (1994). Building learning organizations. *The training and development sourcebook*, 379.
- Shaw, C., & Nerlich, B. (2015). Metaphor as a mechanism of global climate change governance: A study of international policies, 1992–2012. *Ecological Economics*, 109, 34-40.
- Thibodeau, P. H., & Boroditsky, L. (2011). Metaphors we think with: The role of metaphor in reasoning. *PloS one*, 6(2), e16782.
- World Bank. (2014). *World development report 2015: Mind, society, and behavior*. The World Bank.

UN 2018 - <https://unstats.un.org/sdgs/report/2018/interlinkages/>

