



# EVALUATING COMPLEXITY

## PROPOSITIONS FOR IMPROVING PRACTICE

Hallie Preskill and Srik Gopal  
*with Katelyn Mack and Joelle Cook*

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Our teams work across all sectors by partnering with leading foundations, businesses, nonprofits, and governments in every region of the globe. We seek to reimagine social change by identifying ways to maximize the impact of existing resources, amplifying the work of others to help advance knowledge and practice, and inspiring change agents around the world to achieve greater impact.

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# Evaluating Complexity

## Propositions for Improving Practice

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### Introduction

*“The real voyage of discovery consists not in seeking new landscapes, but in having new eyes.”*

– Marcel Proust

Over the last several years, there has been an increasing realization in the social sector that systemic change is not linear, predictable, or controllable. We are learning that social problems are more resilient than previously thought and that traditional means of tackling them often fall short. This is not due to bad intentions, but almost always due to faulty assumptions. Consequently, a call has gone out, growing in volume and ferocity, for civil society organizations—such as foundations, nonprofits, and government—to move beyond traditional, mechanistic strategic models and to take more of an “emergent” approach that better aligns with the complex nature of problems one wishes to solve (Kania, Kramer, and Russell, 2014; Patrizi, Thompson, Coffman, and Beer, 2013).

A similar shift is underway in how we think about the role of evaluation. Traditionally, the evaluation field has focused on assessing the specific effects and impacts of programs according to a set of pre-determined outcomes and indicators, and the aim has been to connect the initiative to the outcomes in a tangible

way. Many evaluators have drawn on Newtonian notions of cause and effect, assuming that “context” could be merely described, or possibly controlled for. While this approach may still work for boundary-defined, stand-alone programs in fairly stable environments, it falls short when it comes to evaluating complex initiatives (e.g., a cradle-to-career education initiative involving multiple actors in a metropolitan area), as well as initiatives that operate in complex environments (e.g., improving agriculture in a conflict-ridden country).

This realization by itself is not news to the evaluation community or to progressive social sector practitioners. We have a conceptual understanding of the ways a different set of assumptions about how social change happens could affect evaluation. However, we have not fully made the journey from that understanding to the development of more explicit principles, tools, and processes that would allow us to make that shift effectively. This practice brief is intended to address the gap between understanding and practice. It is the result of lessons learned through our practice and the insights that others have observed and written about. While the specific ideas may not be particularly new (especially to those who are well immersed in the fields of complexity and evaluation), we hope that this brief brings together what we know about systems change, complexity, and evaluation in a way that

clarifies and describes how the practice of evaluation needs to evolve to better serve the social sector.

## Complexity as a Metaphor for Social Change

*“If we are to continue to draw from science to create and manage organizations, to design research, and to formulate ideas...then we need to at least ground our work in the science of our times.”*

– Margaret Wheatley, *Leadership and the New Science*, 1994, p. 8

A metaphor is the “schema by which we make sense of our situation” (Zimmerman, Lindberg, and Plsek, 1998). While all metaphors are limited by definition, complexity science has emerged over the past few decades to provide an alternative metaphor to the dominant scientific paradigm that has driven our understanding of how social change happens. Just as August Comte and his cohort in the 19th century borrowed from the science of their day to lay the foundations for positivism as the bedrock of the emerging discipline of sociology, social sector practitioners are now looking to the “new science” of complexity to guide thinking on systems change. “In a positivist view of the world, science was seen as the way to get at truth, to understand the world well enough so that we might predict and control it. The world and the universe were deterministic—they operated by laws of cause and effect that we could discern if we applied the unique

approach of the scientific method.”<sup>1</sup> While a mechanistic lens may still be useful in some cases, we are able to take a more expansive view when we adopt the lens of complexity.

It is important to note that complexity science is not a single theory. We often use the term “complexity” to describe a number of different theories and disciplines “that have arisen over the past century—general systems theory, cybernetics, complex adaptive systems, and living systems theory, to name but a few. Complexity science is also inter-disciplinary. Its followers include physicists, biologists, economists, sociologists, anthropologists, and others (Zimmerman et al., 1998). Several notable organizations such as the Santa Fe Institute, the New England Complex Systems Institute, and the Plexus Institute regularly run courses, training sessions, and seminars on complexity science.

In this practice brief, we believe it is essential to share a few key characteristics of complex systems and, from them, infer propositions for evaluating complexity. In coming up with the following characteristics, we have borrowed heavily from a variety of complexity scientists and theorists, as well as evaluation practitioners. We provide a set of references and additional resources at the end of the paper. In the interest of clarity, we have also attempted to distill the concepts down to their essence. We recognize that some of the nuance may be lost in this approach, but we felt that it was a reasonable trade-off in the service of promoting greater appreciation for these characteristics and their implication for evaluation practice.

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<sup>1</sup> “In its broadest sense, positivism is a rejection of metaphysics... It is a position that holds that the goal of knowledge is simply to describe the phenomena that we experience...to stick to what we can observe and measure. Knowledge of anything beyond that, a positivist would hold, is impossible.” Bill Trochim, <http://www.socialresearchmethods.net/kb/positivism.php>

Characteristics of Complex Systems	Propositions for Evaluation
A complex system is always changing, often in unpredictable ways; it is never static	1 Design and implement evaluations to be adaptive, flexible, and iterative
Everything is connected; events in one part of the system affect all other parts	2 Seek to understand and describe the whole system, including components and connections
Information is the fuel that drives learning and helps the system thrive	3 Support the learning capacity of the system by strengthening feedback loops and improving access to information
Context matters; it can often make or break an initiative	4 Pay particular attention to context and be responsive to changes as they occur
Each situation is unique; best principles are more likely to be seen than best practices	5 Look for effective principles of practice in action, rather than assessing adherence to a predetermined set of activities
Different sources of energy and convergence can be observed at different times	6 Identify points of energy and influence, as well as ways in which momentum and power flow within the system
Relationships between entities are equally if not more important than the entities themselves	7 Focus on the nature of relationships and interdependencies within the system
Cause and effect is not a linear, predictable, or one-directional process; it is much more iterative	8 Explain the non-linear and multi-directional relationships between the initiative and its intended and unintended outcomes
Patterns emerge from several semi-independent and diverse agents who are free to act in autonomous ways	9 Watch for patterns, both one-off and repeating, at different levels of the system

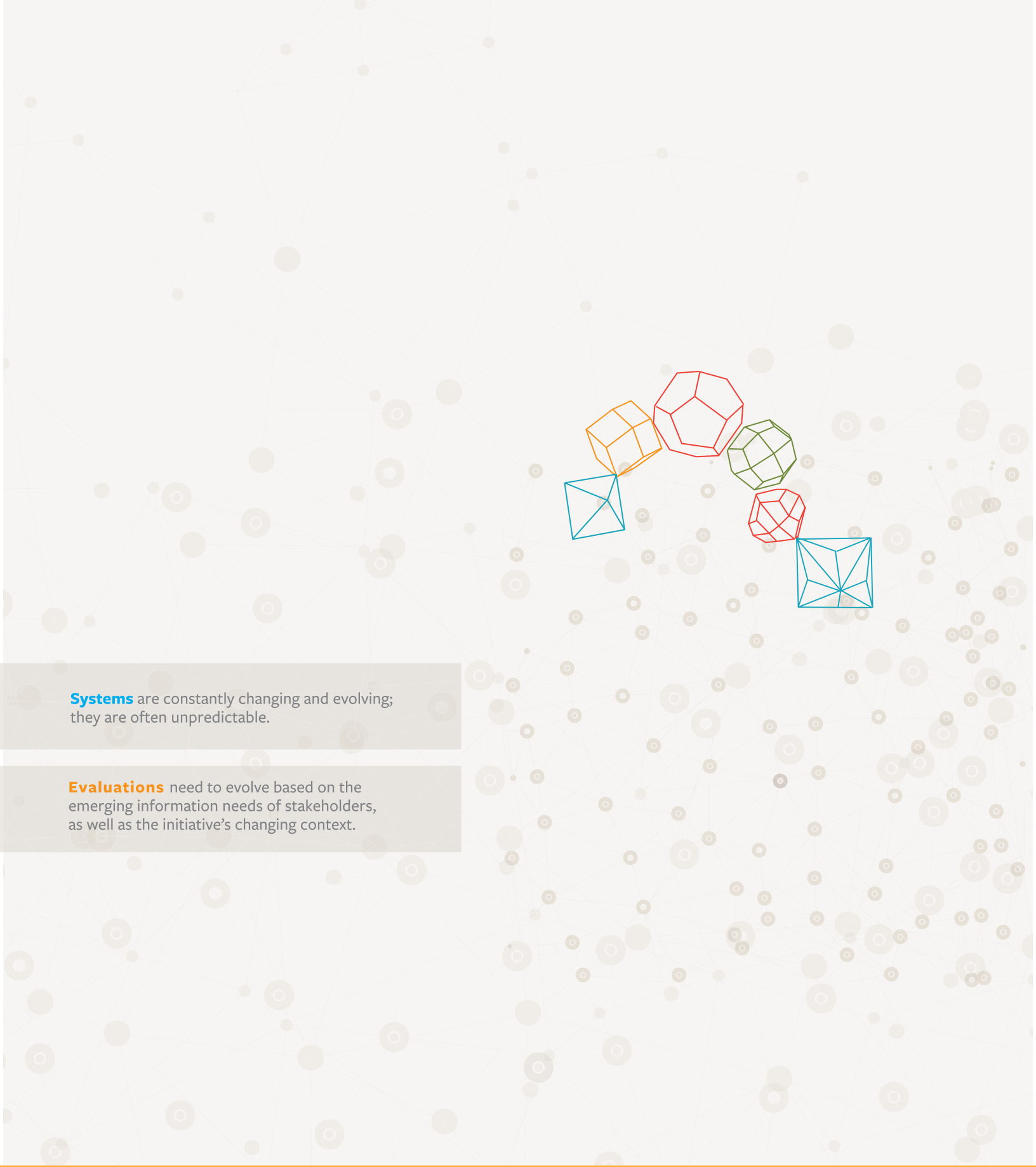
# Propositions for Evaluating Complexity

*“For every complex problem, there is an answer that is clear, simple, and wrong.”*

– H.L. Mencken

We intentionally chose the term “propositions” for framing the ideas in this practice brief because we wanted to offer a set of assertions or statements that express what is important when evaluating complexity. Yet our main reason for putting forward these propositions is not to provide the “right answer,” but rather to offer helpful guidance for those who think about and/or are involved in evaluating complexity—evaluators, philanthropic leaders and staff, nonprofit leaders, and others. We hope that they will work to bridge the gap between generally understood theory and the tangible practice of evaluation. In other words, we hope to provide overall direction on ways to conceptualize, design, and implement evaluations of complex initiatives and/or initiatives that operate in complex settings.

In detailing each of the nine propositions for evaluating complexity, we have attempted to outline the characteristics of a complex system that necessitate the proposition, explain the proposition itself, and identify sample approaches and methods that support the proposition in action (with additional footnotes or references provided for new or innovative methods that readers may not be as familiar with). We recognize that some readers will see the relevance of some or many of these propositions for all evaluations, not just for complex initiatives or initiatives in complex environments. Nonetheless, we believe that the propositions become exceedingly important while evaluating complexity. In other words, the price that one would pay for ignoring them would be much higher (in terms of lost learning, missed opportunities for impact, and wasted evaluation resources). The nine propositions for evaluating complexity are described in detail on the following pages, along with three specific case examples that illustrate how the propositions translate into practice.



**Systems** are constantly changing and evolving; they are often unpredictable.

**Evaluations** need to evolve based on the emerging information needs of stakeholders, as well as the initiative's changing context.

**Proposition 1:** Design and implement evaluations to be adaptive, flexible, and iterative.



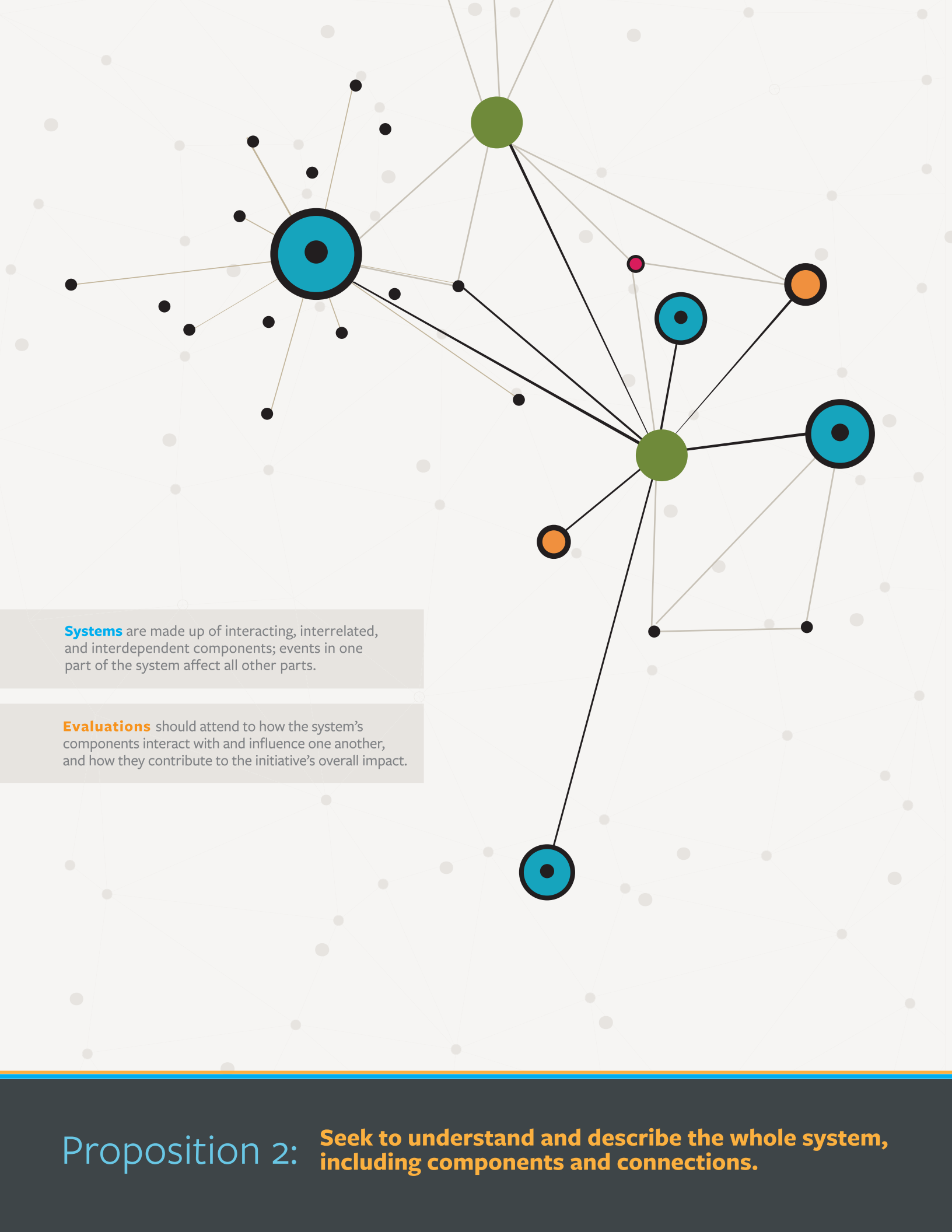
# Design and implement evaluations to be adaptive, flexible, and iterative.

A key characteristic of complex systems is that they are constantly changing and evolving, and so they are often unpredictable. As individuals interact, and as the context responds to opportunities and challenges, changes in the system affect the initiative, and the initiative affects the system. Thus, the development of a comprehensive evaluation plan that overly specifies the evaluation's key questions, evaluation approach, design, data collection and analysis methods, timeline, and budget may not be particularly helpful for evaluating complex initiatives or initiatives in complex environments. Such plans are often predicated on the assumption that the evaluation will follow a certain path, that all outcomes can be predetermined, and that the findings will be delivered at pre-identified points in time (e.g., interim and final reports). However, the longer term nature of complex initiatives and the dynamic environments in which they live requires periodic “refreshes” of an evaluation plan as new insights and lessons emerge.

We have learned that complex initiatives require a steadier stream of information about what is happening and to what effect, and that what might be important to know on Day 10 is very different from what needs to be known on Day 122 or 365. While an initial set of questions and plan for data collection is neces-

sary to begin any evaluation, evaluations of complex initiatives, especially those that address systems change, need to be particularly nimble as stakeholders learn from the feedback being provided by the evaluation. This means that an evaluation might need to change its course one or more times during the evaluation process. For example, in one evaluation, the initial plan was to conduct interviews with subject matter experts, but the context of the initiative suddenly changed and new insights revealed a gap in understanding about how beneficiaries interact with the program in the new context. As a result, the evaluators pivoted and decided to conduct a survey of beneficiaries. Just as complex initiatives adapt over time, so too must evaluation designs and data collection activities.

Having an adaptive, flexible, and iterative evaluation plan means being open to an evaluation process that is always evolving based on the emerging information needs of stakeholders, as well as the initiative's changing context. On a practical level, it means not only having a sufficient evaluation budget, but also having one that can expand and contract as needed. Moreover, it means engaging with an evaluation team that is comfortable and capable of shifting gears quickly and responsively.



**Systems** are made up of interacting, interrelated, and interdependent components; events in one part of the system affect all other parts.

**Evaluations** should attend to how the system's components interact with and influence one another, and how they contribute to the initiative's overall impact.

**Proposition 2:** Seek to understand and describe the whole system, including components and connections.

# Seek to understand and describe the whole system, including components and connections.

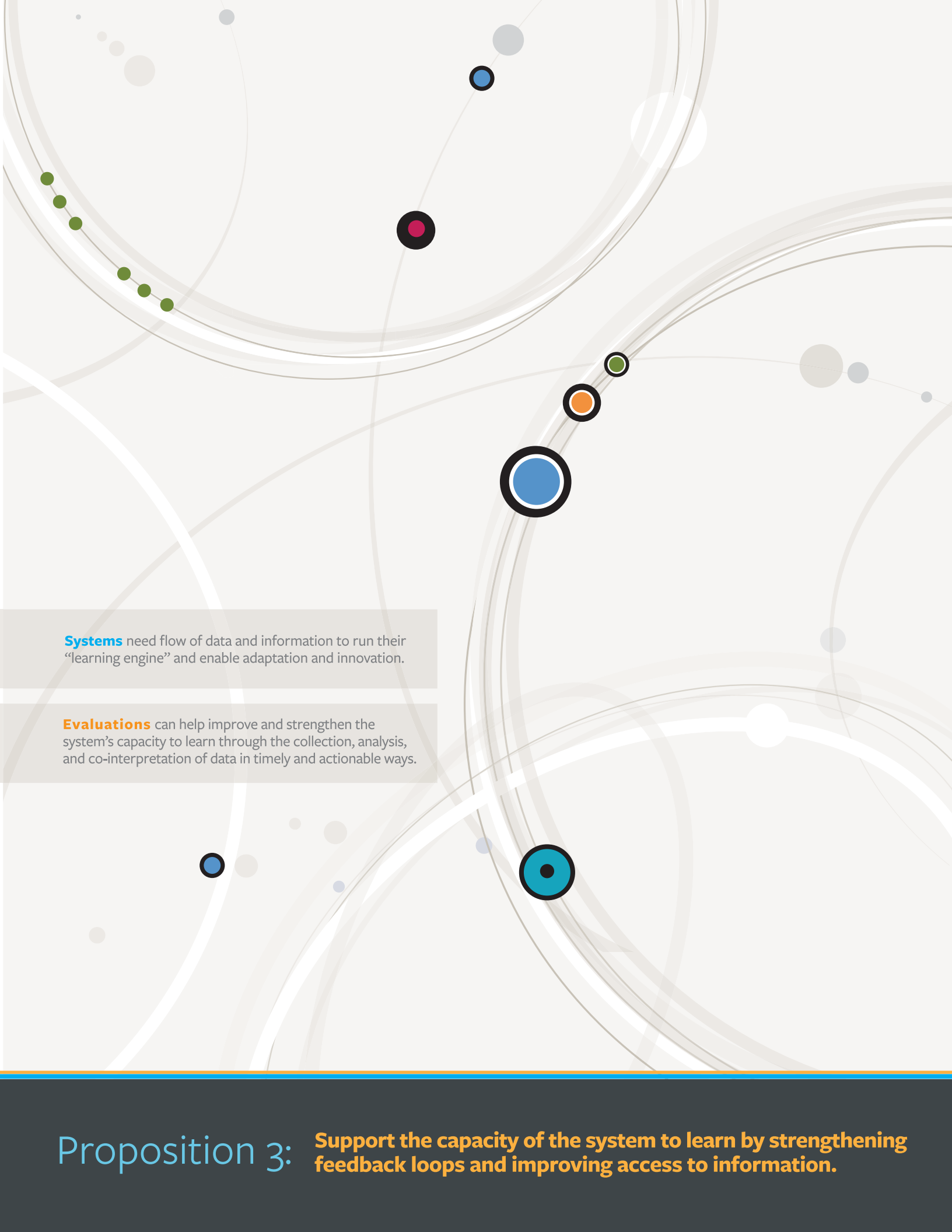
A “system” is commonly thought of as a group of interacting, interrelated, and interdependent sub-systems and components that form a complex and unified whole (Coffman, 2007). “Within the context of systems change, ‘the system’ is the set of actors, activities, and settings that are directly or indirectly perceived to have influence in or be affected by a given problem or situation” (Foster-Fishman, Nowell, and Yang, 2007, p. 198). For example, an initiative to improve early childhood outcomes may involve actors, activities, and settings across the education and care subsystem, the health subsystem, the family and community subsystem, and the social services subsystem. Each of the sub-systems has its own components (for example, education and care involves childcare, pre-school, and K-12 schools, among others), and one can find different types of connections among and between the various parts of the system.

When evaluating complex systems change initiatives, it is important to know how and why different components and sub-systems interact (or don’t) in producing the desired outcomes. This means that, in addition to looking at the initiative’s components, attention is also paid to how the components interact with and influence one another, and how they contribute to the initiative’s overall impact. This will enable evaluators to focus data collection and interpretation activities in a way that acknowledges how the system acts and behaves. Hence, understanding and describing the system as much as possible, including specific components and connections, is an integral part of an evaluation. One way to do this is to

think about three specific layers. Eoyang and her colleagues at the Human Systems Dynamics Institute describe it as studying “the part, the whole, and the greater whole.” It is important to note that observing the system and its components is an ongoing activity, as the boundaries of the system will continue to change and evolve over time. Therefore, the evaluation will need to continuously scan the system for changes as they occur, with an eye toward facilitating the “so what?” from the changes.

A helpful tool in these circumstances is “systems mapping.”<sup>2</sup> The systems mapping process helps capture and describe the elements (e.g., actors, organizations), relationships, and energy within the system that is being evaluated. It tells a story about the initiative’s level of complexity and, along with other tools (e.g., outcomes maps, timeline maps, theory of change, theory of action, social network analysis), it helps identify how and where to focus an evaluation. The creation of a systems map is best done in close collaboration with the initiative’s stakeholders. However, Brenda Zimmerman notes, “systems maps are a great way to start conversations and create awareness of system dynamics, yet, they can lose power when people believe the map is the reality. And, they also lose value if people don’t realize that the maps themselves will evolve as you interact with the players” (personal communication). Thus, it’s important to revisit the system maps every few months, and ideally to conduct additional interviews, to see if and how they reflect current realities.

<sup>2</sup> Systems mapping is an iterative, often participatory process of graphically representing a system, including its components and connections. Some systems maps also show causal loop connections, as well as patterns of influence, between various components. Increasingly, technology tools are becoming available (e.g., [Kumu](#)) to support systems mapping efforts.



**Systems** need flow of data and information to run their “learning engine” and enable adaptation and innovation.

**Evaluations** can help improve and strengthen the system’s capacity to learn through the collection, analysis, and co-interpretation of data in timely and actionable ways.

**Proposition 3:** Support the capacity of the system to learn by strengthening feedback loops and improving access to information.

# Support the capacity of the system to learn by strengthening feedback loops and improving access to information.

A key to the success of complex initiatives is their ability to learn constantly; this learning allows the system's actors to adapt and evolve as they implement the initiative's strategies and activities. The regular flow of data and information is critical to running the system's "learning engine" and enabling adaptation and innovation. Information can also provide positive and negative feedback that reinforces desired patterns or dampens unproductive patterns of behavior.

Evaluations of complex initiatives can help improve and strengthen the system's capacity to learn through the collection, analysis, and co-interpretation of data in ways that are timely and actionable. For example, evaluation can collect data on how individuals in the system are connecting and developing trusting relationships, and what is supporting or hindering those relationships. As data are collected and analyzed, learning conversations with stakeholders can be particularly useful for helping them understand how well things are going, where the system needs attention

(to achieve the desired outcomes), and how and where the system is responding to the initiative's activities.

Interviews and focus groups are often an effective tool for supporting system capacity through individual and collective reflection. Rapid feedback or learning memos, debriefs, critical incident reviews, and after-action reviews are effective mechanisms for sharing emerging insights.<sup>3</sup> The information shared and the lessons generated from the evaluation provide stakeholders with greater confidence in making decisions to stay the course or make changes or adaptations to and within the system. It is important to note here that the evaluator's role in evaluating complexity is somewhat different than that of a traditional program evaluator. Evaluators working in complex systems change environments are not outside observers; rather, they are actively engaged in the process of change and learning, along with those who design, implement, and fund the systems change effort (Patton, 2011).

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<sup>3</sup> An after-action review (AAR) is a structured review or debrief process for analyzing what happened, why it happened, and how it can be done better by the participants and those responsible for the project or event. After-action reviews in the formal sense were originally developed by the U.S. Army and have since become widely adopted as a learning and knowledge management tool. More at [http://en.wikipedia.org/wiki/After-action\\_review](http://en.wikipedia.org/wiki/After-action_review).

## Propositions in Practice

### Challenge Scholars: Evaluating a Systemic Initiative to Improve College Access and Success

Challenge Scholars is a place-based initiative targeting west side neighborhoods in Grand Rapids, Michigan, where 25% of adults lack a high school diploma and another 53% have no education beyond high school. Students in the initiative receive a “last dollar” scholarship (which covers all expenses, including room and board, beyond any eligible financial aid) upon graduating from high school. Unlike “promise programs” that provide scholarships, Challenge Scholars is unique in the fact that it provides wrap-around supports for students and their families starting in sixth grade, several years before the students even begin to apply for college. Specific wrap-around strategies include enhanced instructional support, health and human services, supports to create college awareness and aspirations, and family engagement.

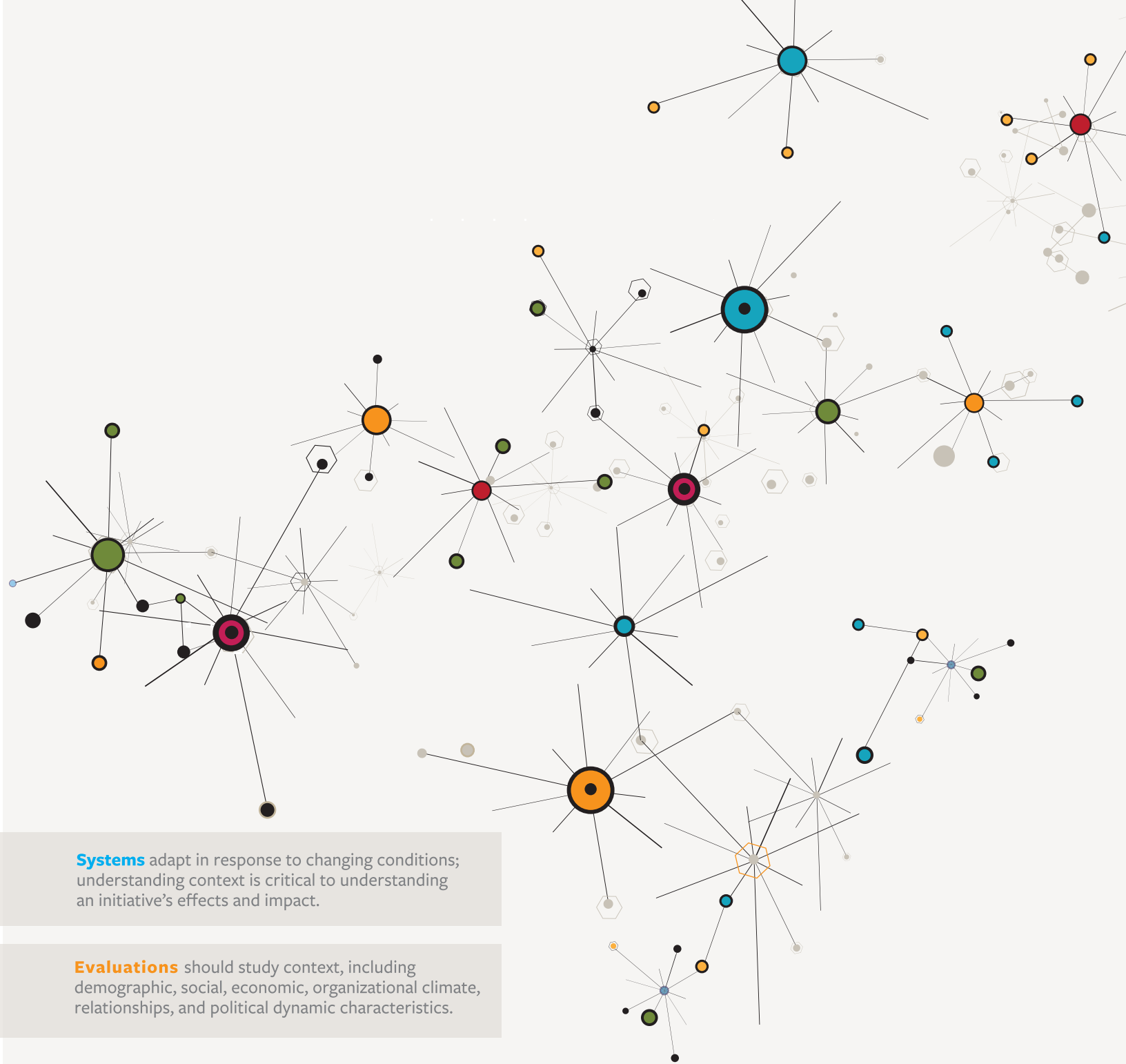
Given the multi-faceted nature of the initiative (i.e., several components have to work in concert for the initiative to succeed) and the ever-changing environment in which the initiative sits (e.g., the public school district is undergoing restructuring that includes school closings), the initiative leaders chose to adopt an evaluation approach that recognizes this complexity. FSG worked with project stakeholders to co-create an evaluation design that was intentionally crafted to be adaptive and flexible in order to accommodate the community’s changing needs and conditions. As the evaluation unfolded and new insights emerged, project leaders prioritized the initial set of key learning questions, added or eliminated data collection activities, and expanded and adjusted the pool of data sources.

To understand the complexity of the initiative and the environment, the evaluation sought to “map” the

system in its entirety, using systems mapping as a tool. The mapping process identified the various actors involved in the initiative (including the community foundation, the school district, higher education institutions, and the local community) and their connections to each other and to key activities (e.g., after school and out-of-school enrichment programs involved in the schools, the community, and higher education). The systems map proved to be a useful point of reference that the key group of stakeholders involved in the evaluation returned to on various occasions.

Throughout the evaluation, project leaders paid attention to building capacity among Challenge Scholars stakeholders to receive feedback, and to use information to drive decision making. Evaluators conducted debriefs with the project leaders after every site visit and followed those with a “learning memo” that highlighted what was working and what needed attention. Bi-annual meetings with a broader group of key stakeholders delved into deeper findings and insights. These informal and formal learning processes generated synthesis and meaning as the evaluators shared their data and observations and worked side-by-side with the program leaders.

Adopting a complexity lens to the evaluation allowed the evaluators to be responsive to the needs of the initiative and, as a result, they were able to build a high level of trust and engagement with stakeholders. This added trust enabled the evaluation to “go deeper” in many ways, such as revealing assumptions that may not otherwise have been explicit, creating shared ownership for the evaluation findings, and setting the tone for prioritizations and improvements across the board. Key findings concerning family engagement, college and career culture, and student readiness have helped move the initiative forward. As the Challenge Scholars initiative looks toward the next several years, the evaluation continues to be a key source of learning and nourishment that can help the initiative succeed.



**Systems** adapt in response to changing conditions; understanding context is critical to understanding an initiative's effects and impact.

**Evaluations** should study context, including demographic, social, economic, organizational climate, relationships, and political dynamic characteristics.

**Proposition 4:** Pay particular attention to context and be responsive to changes as they occur.

# Pay particular attention to context and be responsive to changes as they occur.

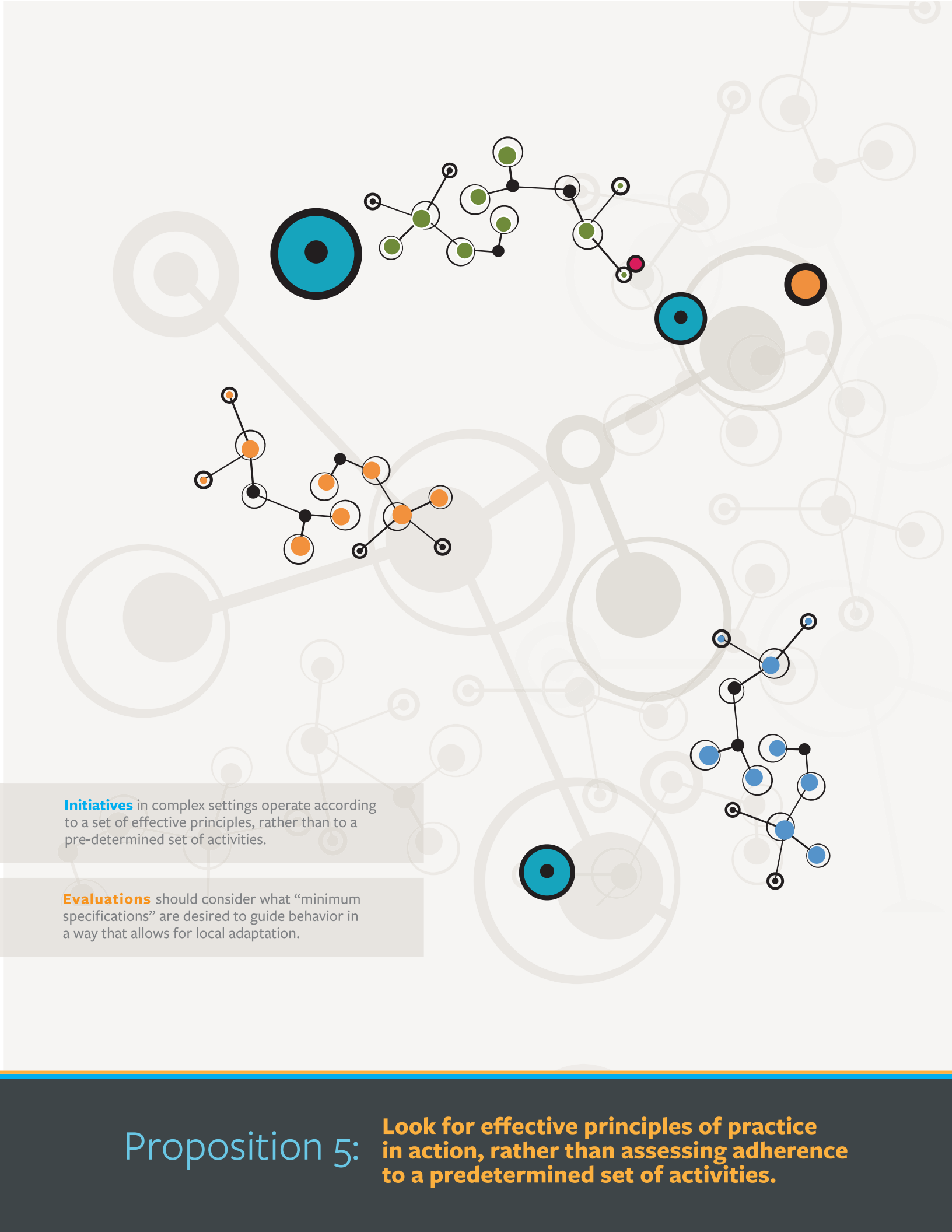
While context matters in most evaluations, it is particularly important to understand the nature and influence of context in complex initiatives and for initiatives in complex environments. Context in evaluation typically involves understanding five specific dimensions: “demographic characteristics of the setting and the people in it, material and economic features, institutional and organizational climate, interpersonal dimensions or typical means of interaction and norms for the relationships in the setting, and political dynamics of the setting, including issues and interests” (Greene, 2005, cited in Fitzpatrick, 2012, p. 9). Because complex initiatives tend to involve multiple actors and organizations, are implemented over multiple years, and naturally adapt in response to changing conditions (challenges and opportunities, as well as negative and positive stimuli), evaluations need to capture information on how the initiative and its context are “co-evolving.” In other words, the evaluation should not only study the context and its influence, but also measure the ways in which the initiative affects the context. This often includes collecting descriptive information about the organization and/or broader political environment, the history, cultures, social norms, values, assumptions, and expectations, as well as past and current economic conditions of the organization and/or community. In addition, evaluation findings should be interpreted and grounded in context to support claims about an initiative’s progress and impact.

For example, an evaluation might discover that an initiative to provide college scholarships leads to

higher housing costs, as more families move into the area to take advantage of the opportunity. Evaluators would have to take that into consideration when making evaluative claims about the effectiveness and impact of the initiative. This recursive process (context affects the initiative and the initiative affects the context) typifies how change happens in complex systems and therefore should be studied. Context is also key to understanding when, how, to what extent, and for whom an initiative can be replicated or scaled. Understanding why an initiative succeeds in one community and whether or not key conditions exist in another community (e.g., pre-established positive working relationships among initiative participants) is critical to evaluating complexity. Finally, gathering robust data on an initiative’s context helps evaluators make judgments about the extent to which and where the initiative has contributed to its desired outcomes, as well as how the system is responding to the context and is exhibiting resilience or atrophy.

Collecting data on an initiative’s context might involve developing a timeline of key events, such as popular culture, organizational changes, political elections, introduction of new policies, local, national, and world crises, economic fluctuations, shifts in “the narrative.” Evaluators should then examine the ways print and social media have discussed issues relevant to the initiative, review changes in demographics and other relevant publicly available data, and conduct interviews with a sample of individuals who have long term experience with the initiative or the issue the initiative addresses.





**Initiatives** in complex settings operate according to a set of effective principles, rather than to a pre-determined set of activities.

**Evaluations** should consider what “minimum specifications” are desired to guide behavior in a way that allows for local adaptation.

**Proposition 5:** Look for effective principles of practice in action, rather than assessing adherence to a predetermined set of activities.

# Look for effective principles of practice in action, rather than assessing adherence to a predetermined set of activities.

When it comes to complex systems change initiatives, each situation is unique. Hence, initiatives are often designed to operate according to a set of effective principles, rather than to adhere to a pre-determined set of activities or “things to do.” However, a key function of most program evaluations has been to focus more on assessing fidelity of implementation, or the extent to which a program is implemented according to a pre-determined model.

A better role for the evaluation of complex initiatives would be to identify and explicate the ways in which effective principles of practice are alive in the work (Patton, 2014). Tony Bryk, President of the Carnegie Foundation for the Advancement of Teaching, puts it this way: “The question we should be asking ourselves is not: ‘How do we get A to reliably cause B every time?’ Instead, we should be seeking the answer to the question: ‘How do we get B to reliably occur in situations of different context?’” (personal communication). In a multi-site initiative, for example, all sites could agree to adhere to a set of principles, but each would be invited to adapt the principles to its own context and target population. Samples of such principles might include: “Build on the assets of the community, honor the cultures of beneficiaries, engage a diverse set of stakeholders, and create a space for community

dialogue.” For example, with a multi-site initiative, the principle of “build on assets” could be a core guiding principle, meaning that any steps undertaken should be aware of and capitalize on existing community assets. The evaluation would then seek to learn how this principle manifests (or doesn’t) in different communities. Data and insights about when, where, and with whom the principles show up in different ways across sites can be a rich source of learning. When looking for effective principles of action, whether with one organization or across many locations, it might be useful to consider what “minimum specifications” or “simple rules” are desired (Zimmerman, et al., 1998) in order to guide behavior in a way that allows for local adaptation.

Reflective practice conversations,<sup>4</sup> as well as design labs,<sup>5</sup> interviews, and focus groups, allow evaluators to identify effective principles of practice. Additional techniques such as Most Significant Change (Davies and Dart, 2005) and Appreciative Inquiry (Preskill and Catsambas, 2006) can also help identify principles. When using these techniques, it is important to build from actual lived experiences to help participants connect those experiences to the principles. In-depth case studies, portrayals, and vignettes provide useful ways to illustrate how the stated principles of practice are present in action.

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<sup>4</sup> A reflective practice session engages participants in a generative conversation, focusing on a key concept or area of inquiry that arises from interviews or is identified by evaluators. Participants share concrete experiences and together analyze their stories for patterns and themes regarding outcomes. The group will collectively determine what actions and next steps need to take place. In addition to providing valuable data, a reflective practice session is intended to be a capacity building process for participants, who benefit from hearing others’ ideas, share their own knowledge, work through a process to analyze data, and contribute to next steps (Patton, 2011). <sup>5</sup> Design lab is a tool derived from the discipline of “design thinking.” Participants typically engage with each other and move through a series of “stations” intended to provoke thinking and dialogue on how the initiative gains traction, how they benefit from the initiative, and any potential unintended outcomes. (For information on design thinking, see: <http://www.fastcompany.com/919258/design-thinking-what>)



**Initiatives** are made up of diverse actors who are constantly interacting with others; these interactions often have unexpected effects on the initiative's implementation and its outcomes.

**Evaluations** should look for times when individuals are exerting influence, places where there is momentum or stagnation, and how power is exercised in both positive and negative ways.

**Proposition 6:** Identify points of energy and influence, as well as ways in which momentum and power flow within the system.

# Identify points of energy and influence, as well as ways in which momentum and power flow within the system.

Initiatives live in systems (e.g., education, healthcare, government, family) that are composed of many semi-independent and diverse actors who often act in unpredictable ways. As such, individuals, either acting alone or as part of an organization, are constantly interacting with others. These interactions, which may produce simple conversations and/or new or different relationships, can affect the motivations and actions of those involved with the initiative, as well as the distribution of power within the system. Because of the dynamic nature of how and when these interactions occur, they often have unexpected effects on the initiative's implementation and its outcomes.

As individuals engage with an initiative, they will intentionally and unintentionally affect others' thinking and practice. As a result, the initiative's strategy and pace of progress toward its goals will evolve, often in nonlinear ways. Sources of energy and convergence can be observed in the form of "attractors."<sup>6</sup> Thus, evaluators need to look for times and places where energy, influence, power, and momentum show up within the system. This involves looking for when, where, and how individuals are exerting influence,

places where there is momentum or stagnation (and gaps) in the system with regard to progress on the desired outcomes, and when, where, and by whom power is exerted in both positive and negative ways. For example, an initiative working to change how a population thinks about and provides services to beneficiaries with addiction issues is hosting a series of learning-oriented meetings with researchers, policy makers, community members, health care professionals, advocacy organizations, and nonprofit leaders. Instead of solely focusing on how individuals experience these meetings (e.g., did they learn something, and were they satisfied with the experience?), the evaluation might also focus on how participants spread their message to others (informally and formally) to see if certain individuals are creating momentum and increased energy around the issue.

The patterns of changes—where, why, and among whom they occur—would be important for the evaluation to explore. Evaluations can employ a variety of data collection methods to understand where energy, influence, momentum, and power exist within a system. These include systems mapping, focus groups,

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<sup>6</sup> "As a complex system adapts to its environment, a preferred state or way of doing things is discovered, and the whole system converges on that pattern. This is called an attractor or attractor state. In human organizations, a desired future state may also be expressed through a shared vision. The attractor state may have happened naturally or it may be planned—either way, the organization as a whole is drawn to it. Over time a strong pattern of thinking and working can become so deeply ingrained that it is very difficult to change. If a new attractor state is desired, it must connect with the energies, needs and desires of the people in the system, or it will not last." <http://www.codynamics.net/intro.htm>

ripple effects mapping,<sup>7</sup> observations, digital storytelling, snap shot surveys, Bellwether interviews,<sup>8</sup> and social network analysis. Data collected from these methods can provide key insights into people’s level of interest and engagement, as well as the political environment, of the initiative. For example, an evaluation would look for examples of ways that individuals and organizations build new connections with others and places where they see new or renewed interest in the initiative’s goals, new power dynamics, new or different patterns of engagement, and new innovations or experiments related to the initiative.

## Propositions in Practice

### Building Healthy Communities: Evaluating a Multi-Site Place-Based Initiative

In 2010, The California Endowment launched an ambitious 10-year, \$1 billion strategy called Building Healthy Communities, to improve the health of people living in California. Building Healthy Communities is a bold and innovative approach to multi-site place-based philanthropy that combines statewide policy advocacy and communication with concentrated investment in 14 distressed communities. In addition to the geographic and cultural diversity of the 14 communities, this effort spans a wide range of issues from childhood obesity and violence prevention to land use and development.

In order to test its assumptions about how change would happen, The Endowment commissioned FSG

to conduct an independent evaluation (“strategic review”) of Building Healthy Communities in 2013. The strategic review examined critical elements of the Building Healthy Communities strategy, such as the alignment between local, regional, and statewide efforts, and explored how the foundation’s internal structures and processes affect its grantees and partners. The goal of the evaluation was to provide Endowment leaders with timely, actionable information, as well as recommendations that could be used to reflect on and modify their strategies.

When designing the strategic review, the foundation and its evaluators chose to include three in-depth case studies to complement the broad data collection that occurred through interviews and surveys. The case studies focused on work in two specific communities (Sacramento and Santa Ana) and one cross-cutting issue (boys and men of color), and were vital to understanding the context of this complex systems change effort. Perhaps most importantly, when reporting its findings, the evaluation team always took time to acknowledge the history of the work in places and to highlight challenges and opportunities that might have naturally evolved out of that context (e.g., where a history of community organizing was particularly strong or weak). This practice ensured that the strategic review grounded its findings in the context of the work and didn’t overstep in drawing conclusions about the extent of progress or impact of the initiative.

The Endowment’s approach to multi-site place-based philanthropy efforts provides each community with

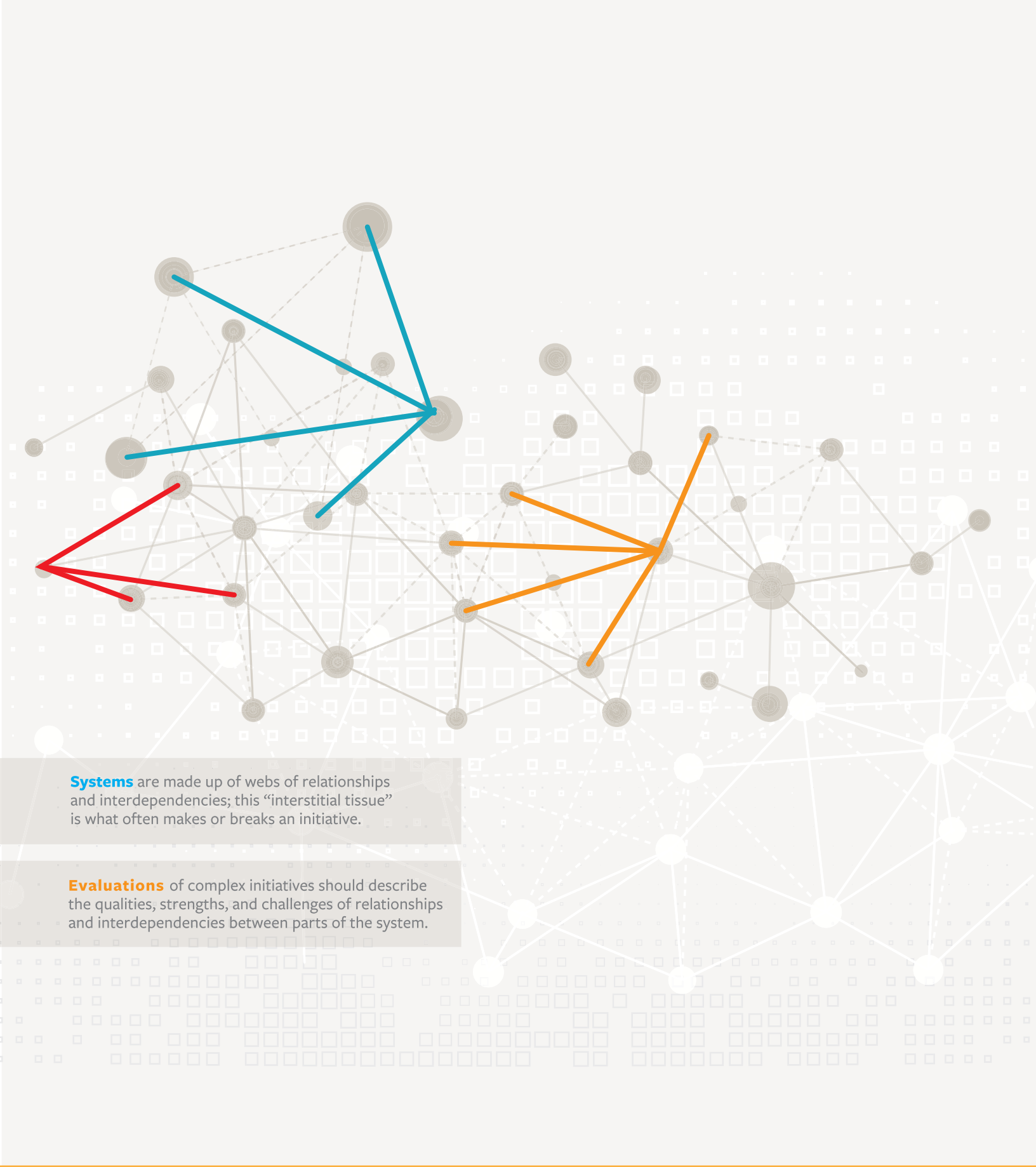
<sup>7</sup> Ripple Effect Mapping is a technique that engages program and community stakeholders to retrospectively and visually map the story resulting from a program or complex collaboration. It uses elements of Appreciative Inquiry, storytelling, and mapping. For more information, see <http://blog.lib.umn.edu/vitality/ripple-effect-mapping/>. <sup>8</sup> The Bellwether Methodology, developed by the Harvard Family Research Project, adds two unique features to basic key informant interviews: 1) the interview sample consists of bellwethers (e.g., thought leaders whose opinions carry substantial weight and predictive value in the policy arena); and 2) interviewees are not informed in advance of the specific policy focus of the interview and instead are told that the interview will discuss a range of policy issues. See Coffman and Reed for more information. [http://www.innonet.org/resources/files/Unique\\_Methods\\_Brief.pdf](http://www.innonet.org/resources/files/Unique_Methods_Brief.pdf)

the flexibility to tailor and adapt foundation guidelines and requirements to its own context. As a result, the strategic review could not take a typical approach to assessing adherence to a set of predetermined activities. Instead, evaluators sought to identify effective principles of practice. For example, each of the 14 communities that participated in Building Healthy Communities was required to establish a collaborative body that would convene a diverse set of stakeholders (such as residents, youth, nonprofit leaders, and staff at public agencies). While there were guidelines concerning the nature of this collaborative body, communities determined the roles, processes, and final structure that would work best given their context and unique set of goals. To address this complexity, evaluators used data collected from case studies, surveys, and interviews to identify patterns that enabled the collaborative to operate more or less effectively in a given location. This analysis led to a set of conclusions that resonated with a broader set of communities, not just those that participated in the in-depth case studies.

The Endowment also recognized that the path to success would not be linear or predictable. While it identified several long-term goals, such as reversing the childhood obesity epidemic and reducing youth violence, the strategy has relied on an iterative process. Practitioners identified locations that

exhibited particular energy and momentum in the state and local socio-political environment and took action to leverage these changes. Some staff members at The Endowment refer to this practice as “strategic opportunism.” Rather than using the strategic review to track progress against a predetermined set of outcomes and indicators, evaluators sought to identify points of considerable progress, energy, or momentum in the system. For example, some cases exhibited particular energy around issues at a local level and momentum on something different at a state level. In addition, evaluators found that stakeholders were gaining traction around particular issues, such as land use, school discipline, and food access. By identifying where the system’s energy lay, evaluators were better able to promote the strategies and approaches that contributed to or benefited from systems changes.

Understanding and responding to evolving context, seeking out principles rather than “practices,” and identifying places of energy and momentum in the system were critical to successfully evaluating Building Healthy Communities. The approach made the findings more credible and helped to ensure the strategic review’s relevance to foundation decision makers. As a result, the final set of findings and case study narratives helped The Endowment take steps to improve and refine its strategy.



**Systems** are made up of webs of relationships and interdependencies; this “interstitial tissue” is what often makes or breaks an initiative.

**Evaluations** of complex initiatives should describe the qualities, strengths, and challenges of relationships and interdependencies between parts of the system.

**Proposition 7:** Focus on the nature of relationships and interdependencies within the system.

# Focus on the nature of relationships and interdependencies within the system.

A defining characteristic of complex systems is the web of relationships and interdependencies that are present within it. This “interstitial tissue” is what often makes or breaks an initiative—either by amplifying the power of the initiative or by getting in the way of the initiative’s success. It is also possible to argue that the relationships between entities are as important, if not more so, as the entities themselves. For example, educational researchers have found that the level of relational trust between teachers, administrators, parents, and students in a school often acts as a differentiating factor between high and low performing schools, more than instruction or curriculum (Bryk and Schneider, 2003). With each relationship, it is important to understand its nature (e.g., is it a funding relationship or a partnering relationship?), its strength (e.g., is the relationship strong, weak, or tenuous?), and its longevity (e.g., is the relationship permanent or temporary, new or old?). In addition, it is important to know the levels of relational trust, the quality of the relationship, and the nature of the relationship (e.g., the ways and extent to which they share information, plan together, and co-construct solutions).

Evaluations of complex initiatives should capture and describe the qualities, strengths, and challenges of relationships and interdependencies between various

parts of the system. In addition to making the relationships explicit, evaluations can help us understand how these relationships evolve over time. For example, the evaluation of a systemic early childhood (birth to age 8) initiative may find it useful to track the relationships between entities that serve infants and toddlers, those that serve pre-kindergarteners, and those that serve elementary school students. Such analysis may determine whether these traditionally siloed parts of the early childhood continuum are indeed transforming how they interact with one another (e.g., sharing data about children as they move from one system to another).

Systems mapping and social network analyses<sup>9</sup> can be helpful tools for understanding the relationships and interdependencies among actors within the system. Surveys, interviews, digital storytelling, and web analytics, whether related to or separate from those approaches, can probe the nature, strength, quality, and longevity of critical relationships between individuals and entities within the system. Insights from such data collection efforts may shed light on how relationships affect the outcomes of the intervention, while also illuminating lessons about how the initiative affects actors’ relationships within the system.

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<sup>9</sup> “Social network analysis (SNA) is the mapping and measuring of relationships and flows between people, groups, organizations, computers, URLs, and other connected information/knowledge entities. The nodes in the network are the people and groups while the links show relationships or flows between the nodes. SNA provides both a visual and a mathematical analysis of human relationships.” <http://www.orgnet.com/sna.html>. SNA is particularly effective in evaluating complexity because it can highlight patterns within and among relationships, as well as the reasons, consequences, and stability and/or dynamics of observed patterns.





**Initiatives** demonstrate non-linear, unpredictable, and iterative relationships between cause and effect.

**Evaluations** can track the pathways between an initiative and its outcomes and understand how these vary under different conditions and circumstances.

**Proposition 8:** Explain the non-linear and multi-directional relationships between the initiative and its intended and unintended outcomes.

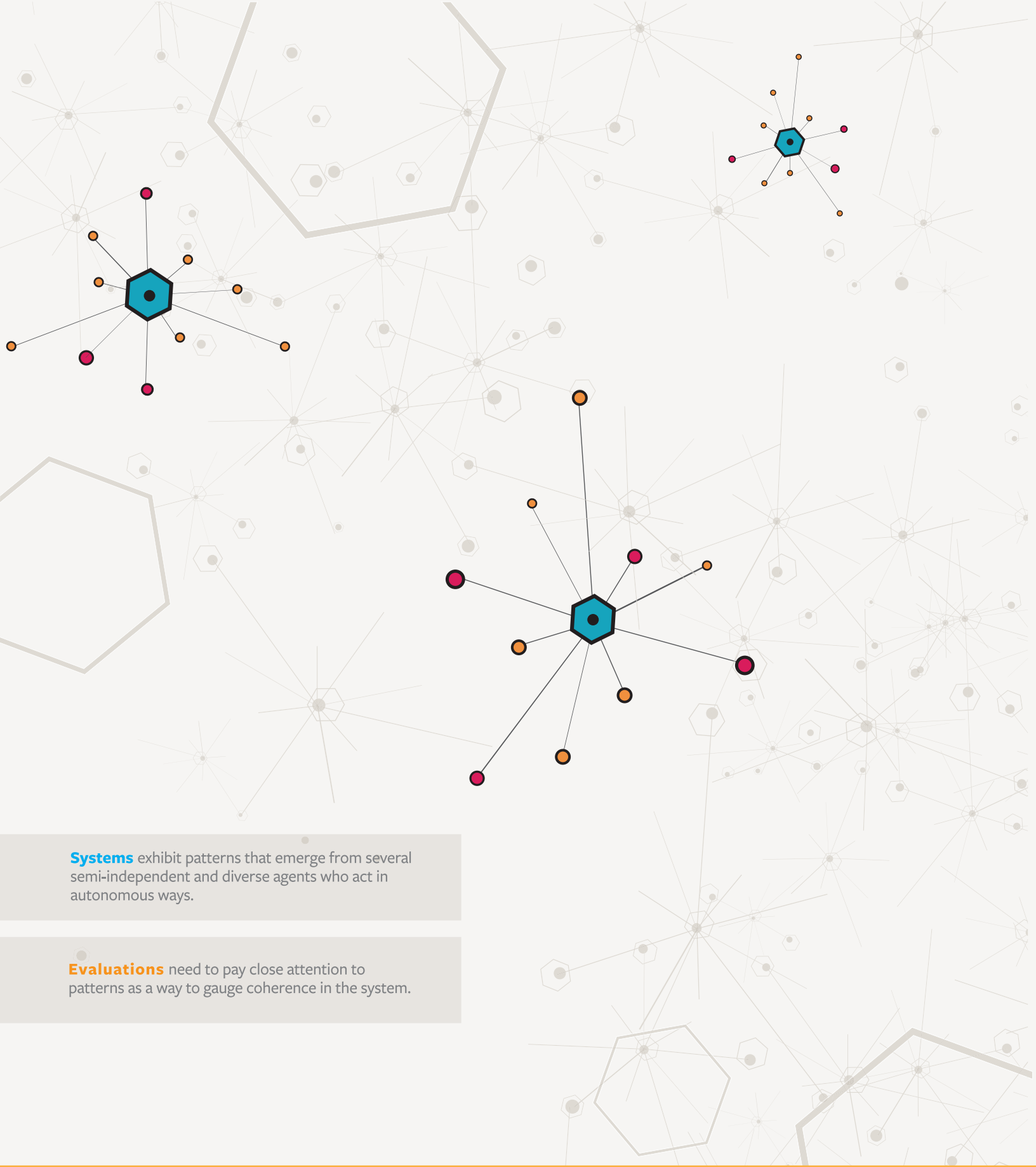
# 8 Explain the non-linear and multi-directional relationships between the initiative and its intended and unintended outcomes.

A distinct characteristic of complex systems is the non-linear and multi-directional nature of relationships between the initiative and its outcomes. Evidence for non-linearity comes from observations that: a different set of initial conditions creates disproportionate differences between cause and effect; the distance between cause and effect can be long or short in time; there are often multiple causes for any one change; and change can occur through huge leaps and is not always incremental or proportional (Forss and Schwartz, 2011, p. 11). When the conditions are right, a relatively small effort might result in a significant change in outcomes. (The proverbial “butterfly flapping its wings” might, under the right conditions, catalyze strong winds to occur elsewhere.) On the other hand, a large investment of time and money in an initiative still might not yield results. Evidence for multi-directionality comes from observations that the effect often influences the cause, and that various factors, including ones that are traditionally dismissed as “outliers,” influence observed changes.

Evaluations of complex initiatives should understand and capture the non-linear and multi-directional nature of relationships between cause and effect. For instance, an evaluation of an economic development initiative might pose the following questions: Why do certain poverty alleviation strategies, carried out at the right time in the right context, seem to result in vast

improvements in living conditions, while others do not? How does improving families’ health improve their economic conditions and vice versa? In order to answer these questions, evaluators may want to track the pathways between an initiative and its outcomes and understand how these vary under different conditions and circumstances.

Because of the variety of activities and actors, as well as the emergent and relational nature of complex initiatives or initiatives in complex environments, traditional theories of change and logic models may have limited uses. While such tools can be useful in visualizing and communicating the desired outcomes from a set of investments and activities, their linear and predictive nature cannot fully capture the complexity of systems change efforts. To understand the non-linearity and multi-directionality of an initiative’s effects and impact, evaluators can collect data from interviews, focus groups, Appreciative Inquiry, media tracking, observations, ripple effect mapping exercises, Contribution Analysis (Mayne, 2008), and causal diagrams. These methods can help identify emergent and unpredicted outcomes while illustrating the links and relationships between activities and both expected and unexpected or unintended outcomes (which may be both negative and positive). They can also provide insights into the ways in which the initiative contributes to its desired outcomes (or doesn’t).



**Systems** exhibit patterns that emerge from several semi-independent and diverse agents who act in autonomous ways.

**Evaluations** need to pay close attention to patterns as a way to gauge coherence in the system.

**Proposition 9:** Watch for patterns, both one-off and repeating, at different levels of the system.

# Watch for patterns, both one-off and repeating, at different levels of the system.

In complex adaptive systems, “patterns are similarities, differences, and connections that have meaning across space and time” (Eoyang and Holladay, 2013, p. 43).

Similar patterns of behavior, interactions, and language, called “fractals,” are often repeated at multiple levels of an organization or system.<sup>10</sup>

These patterns emerge from several semi-independent and diverse agents who are free to self-organize in autonomous ways. For example, consider a nonprofit that works to improve the lives of the homeless. We may see front-line staff at the point of service reflecting a certain ethos in their patterns of interaction, such as coordinating with each other and providing referrals to other services. Upon further investigation, we may learn that this is part of a larger pattern of collaborative problem solving that is espoused and modeled by the CEO and her leadership team, reflecting an orientation toward thinking holistically about housing, counseling, and coordination of other services, rather than a simple “fix” to get people off the streets. But patterns of behavior in a system are not constant; the interplay between the system’s changing environment and the initiative’s agenda are constantly evolving and adapting (Rogers, 2008, p. 39). Only by understanding such patterns can deliberate action be taken to shift the patterns in ways that are more productive (Eoyang and Holladay, 2013).

Evaluations of complex initiatives, or of initiatives in complex environments, need to pay close attention to patterns as a way to gauge coherence in the system. Systems that are more coherent, it is generally believed, are more efficient and adaptable than those that are less coherent.<sup>11</sup> For instance, it could be important for evaluators to understand whether people’s expectations of the initiative are aligned, whether they behave in complementary ways with regard to achieving the initiative’s goals, and whether they use similar narratives to explain the initiative’s aims and operations. Within a collective impact initiative, for example, an evaluation could look for patterns in the ways that different working groups function—how they develop agendas, the approach they take to engagement (e.g., democratic vs. autocratic), and how they use data to learn.

Evaluations should also be attuned to how certain patterns (both productive and unproductive) repeat themselves at multiple levels of a system. When making sense of information, evaluators should ask, “What is showing up here?” and “What similarities and differences do we see across different parts/levels of the system?” In the above example of the homelessness nonprofit, observations of consistent behavioral patterns among the service providers may lead the evaluators to closely analyze the actions of the

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<sup>10</sup> “A fractal object repeats a similar pattern or design at ever-smaller levels of scale. No matter where you look, the same pattern will be evident. In any fractal object, we are viewing a simple organizing structure that creates unending complexity.” (Wheatley, 1994, p. 80) <sup>11</sup> Our definition of “coherence” allows for a certain degree of diversity that enables the system to function well and be resilient; in other words, it is not synonymous with “sameness.”

leadership team, which may then prompt additional in-depth data collection with the whole staff in order to fully understand the source and nature of the patterns. Conducting observations are often the best initial way for evaluators to understand patterns. This includes observing meetings, gatherings, and “point of service” locations (e.g., classrooms, clinics, shelters). Interviews, focus groups, and surveys, often as part of a time-series design, provide helpful insight into how and why certain patterns seem to develop.

## Propositions in Practice

### Alberta Family Wellness Initiative: Evaluating a Cross-Disciplinary Knowledge Mobilization Effort

The Norlien Foundation established the Alberta Family Wellness Initiative (AFWI) in 2009 as a platform to invest in improving the health and wellness of children and families in the province of Alberta, Canada, by sharing and promoting the application of knowledge about brain and biological development as it relates to early childhood development, mental health, and addiction. Given the cross-sector and multi-disciplinary nature of what AFWI aims to achieve, the initiative was set up as a knowledge mobilization effort to engage and catalyze relationships across stakeholders from science, policy, and practice domains. Now in its sixth year, the initiative continues to navigate complex political and relational dynamics as it seeks new and better ways to share knowledge about brain science, change the behaviors and practices of direct service providers in the province, and deepen the momentum for broad-based systems change in the province.

One particular goal was to better understand the nature of relationships and interdependencies within the early childhood and addiction and mental health systems. FSG worked with initiative staff and stakeholders to develop a map that depicted the various organizations with which the initiative interacted. Although the map did not depict all possible actors within the system, it highlighted the complexity of the initiative by noting the sheer number of actors involved in this space, the extensive relationships AFWI had built, and relationships that needed further cultivation. In addition to gaining greater clarity about the landscape of organizations in the system, the evaluation also explored ways that individuals created change within their own organizations and the system. The evaluation profiled four of these change agents in depth to better understand the role that relationships played in moving the system toward the initiative’s goals.

In addition to relationships, a number of other factors were also pushing on the system. Albertans face a complex configuration of intersecting, interdependent parts (e.g., individuals, organizations, and institutions across multiple sectors) when they seek improved health and wellness, particularly in the early childhood development and addiction/mental health spaces. Much of AFWI’s strategy to date has aimed to inform and empower individual change agents to incorporate knowledge into strategies, programs, and professional practices within their organizations and spheres of influence, as well as into policies, resource allocations, and institutional relationships at the system level. Yet the initiative also sought change at the organizational and systems level.

To understand how and to what extent the initiative was contributing to changes in existing systems, an important task was to co-create a Theory of Action with initiative staff and leadership to depict how and why its knowledge mobilization activities would spur changes in the ways individuals, organizations, and systems understood and approached early child development and addiction and mental health. Given the unpredictable nature of the work, the theory of action told the non-linear, multi-directional story of systems change, rather than a complicated series of outcomes and arrows. It did so by using a circular image to depict how the initiative's activities may influence changes in systems and individuals, at different times or at the same time, with arrows going in multiple directions.

Incorporating a systems-change, change management, and complexity perspective allowed the evaluation to be useful. The map of systems players and the theory of action captured the complex relationships and multi-directional path to progress embedded in the initiative and helped AFWI tell a deeper story about how its work contributes to the changes it seeks. In addition, identifying patterns at multiple levels within the system showed tangible progress in the proximal outcomes of the initiative's knowledge translation strategy and provided valuable input into strategic decisions concerning ways to continue supporting organizational and systems change.

# Summary and Conclusion

*“The future can’t be predicted, but it can be envisioned and brought lovingly into being. Systems can’t be controlled, but they can be designed and redesigned. We can’t surge forward with certainty into a world of no surprises, but we can expect surprises and learn from them...We can’t impose our will upon a system. We can listen to what the system tells us, and discover how its properties and our values can work together to bring forth something much better than could ever be produced by our will alone.”*

*-Donella Meadows, (nd), Donella Meadows Institute.*

Given the limitations of traditional approaches to evaluation when it comes to evaluating complex, multi-faceted initiatives, as well as initiatives that operate in complex settings and environments, we must consider a different approach, which the nine propositions embody. The table below summarizes each of the propositions, along with helpful tools and methods that can be used to enhance data collection and use.

Propositions	Description	Helpful Tools/Methods
<b>1</b> <b>Design and implement evaluations to be adaptive, flexible, and iterative.</b>	<p>Evaluation needs to be nimble and open to periodic “refreshes” as stakeholders constantly learn from feedback.</p> <p>Evaluators must be comfortable with shifting gears as needed.</p>	<ul style="list-style-type: none"> <li>• Flexible evaluation plans and budgets</li> </ul>
<b>2</b> <b>Seek to understand and describe the whole system, including components and connections.</b>	<p>It’s important for the evaluators to know how and why different components interact.</p> <p>This is to be treated as a “dynamic” and ongoing activity, rather than one-off.</p>	<ul style="list-style-type: none"> <li>• Systems Mapping</li> <li>• Social Network Analysis</li> <li>• Interviews</li> </ul>
<b>3</b> <b>Support the capacity of the system to learn by strengthening feedback loops and improving access to information.</b>	<p>Evaluation can help improve and strengthen the system’s capacity to learn through the collection, analysis, and co-interpretation of data.</p> <p>As data are collected and analyzed, learning conversations with stakeholders and insights into how and where the system is responding to the initiative’s activities can be particularly useful.</p>	<ul style="list-style-type: none"> <li>• Rapid Feedback Debriefs</li> <li>• Summaries/Learning Memos</li> <li>• Critical Incident Reviews</li> <li>• After Action Reviews</li> </ul>

Propositions	Description	Helpful Tools/Methods
<p><b>4</b> Pay particular attention to context and be responsive to changes as they occur.</p>	<p>Context must be explicitly studied as part of the evaluation.</p> <p>Evaluation should also measure ways in which the initiative affects the context.</p> <p>Evaluation findings should be interpreted and grounded in context.</p>	<ul style="list-style-type: none"> <li>• Timeline of key events</li> <li>• Review of information related to context, including print and social media, demographic information, and other publicly available data</li> <li>• Interviews</li> </ul>
<p><b>5</b> Look for effective principles of practice in action, rather than assessing adherence to a predetermined set of activities.</p>	<p>Evaluation should identify and explicate how effective principles of practice are alive in the work.</p> <p>Data and insights about how, where, and with whom the principles show up can provide a rich source of learning.</p>	<ul style="list-style-type: none"> <li>• Reflective Practice</li> <li>• Design Labs</li> <li>• Interviews</li> <li>• Focus Groups</li> <li>• Most Significant Change</li> <li>• Appreciative Inquiry</li> <li>• In-depth Case Studies</li> </ul>
<p><b>6</b> Identify points of energy and influence, as well as ways in which momentum and power flow within the system.</p>	<p>Evaluation needs to look for times and places where energy, influence, power, and momentum show up within the system.</p> <p>This may include examples of how individuals and organizations are building new or different connections, power dynamics, and patterns of engagement.</p>	<ul style="list-style-type: none"> <li>• Systems Mapping</li> <li>• Focus Groups</li> <li>• Ripple Effect Mapping</li> <li>• Observations</li> <li>• Digital Storytelling</li> <li>• Snap Shot Surveys</li> <li>• Bellwether Interviews</li> <li>• Social Network Analyses</li> </ul>
<p><b>7</b> Focus on the nature of relationships and interdependencies within the system.</p>	<p>Evaluation should capture and describe relationships and interdependencies between various parts of the system.</p> <p>With each key relationship, it's important to understand its nature, its strength, and its longevity.</p>	<ul style="list-style-type: none"> <li>• Systems Mapping</li> <li>• Social Network Analyses</li> <li>• Surveys</li> <li>• Interviews</li> <li>• Digital Storytelling</li> <li>• Web Analytics</li> </ul>
<p><b>8</b> Explain the non-linear and multi-directional relationships between the initiative and its intended and unintended outcomes.</p>	<p>Evaluation should capture the complex relationship between cause and effect.</p> <p>This process involves tracking the pathway between an initiative and its outcomes, and understanding how it varies under different conditions and circumstances.</p>	<ul style="list-style-type: none"> <li>• Interviews</li> <li>• Focus Groups</li> <li>• Appreciative Inquiry</li> <li>• Media Tracking</li> <li>• Observations</li> <li>• Ripple Effect Mapping</li> <li>• Contribution Analysis</li> <li>• Causal Diagrams</li> </ul>
<p><b>9</b> Watch for patterns, both one-off and repeating, at different levels of the system.</p>	<p>Evaluation needs to pay close attention to patterns as a way to gauge the coherence in the system.</p> <p>Attention should also be paid to the ways certain patterns (both productive and unproductive) repeat themselves at multiple levels of a system.</p>	<ul style="list-style-type: none"> <li>• Observations</li> <li>• Interviews</li> <li>• Focus Groups</li> <li>• Surveys</li> <li>• Time Series Designs</li> </ul>



We hope that the three cases in this brief provide concrete examples of the propositions in practice. Each case is unique and operates in a different context. Taken together, however, they represent the future of how social change initiatives are conceived, created, and carried out, involving multiple actors and factors that work together in dynamic environments, in often unpredictable ways, to produce sustainable solutions to chronic problems. And each initiative, in its own way, adopted an approach to evaluation that recognized and accommodated complexity, rather than “assuming it away.”

The three cases, as well as our experience more broadly, testify to the benefits of designing and implementing evaluations from a complex lens, rather than a simple or complicated one (Westley, Zimmerman, and Patton, 2006). Focusing on complexity in evaluation drives strategy and learning in a tangible and purposeful way, and stakeholders see this approach as more authentic. As we acknowledge that our initiatives need to take complexity into account in their strategic design and implementation, we should realize that our methods of evaluation should as well. Fortunately, those who are trying to improve the lives of people around the world, as well the health of our environment, are increasingly ready to adopt the complexity lens. We hope this practice brief provides some guidance and tools for ensuring that evaluation not only embraces the complexity of the change process, but that it also serves as a compass for navigating the messiness and volatility of change.

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