Refining Theories of Change

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Background: Despite the disparities in how they are defined and what elements are included, most Theories of Change remain consistent in one way – their visual format. Typically, Theories of Change are presented as a one-page visual in a flowchart style with lines and boxes of uniform size. In addition, Theories of Change are often created as stand-alone tools that are rarely linked effectively to other organizational tools.

Purpose: The authors: (1) propose the essential elements that contribute to robust Theories of Change and clarify the characteristics that distinguish Theories of Change from other organizational tools and formats; (2) suggest additional elements for inclusion in the Theory of Change; (3) present graphic alternatives that allow for an evolution in representing their complexity and depth; and (4) provide ways to link Theories of Change to other organizational tools to increase organizational alignment, efficiency, and, most importantly, impact.

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Intervention: Not applicable.

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Theory of Change Content
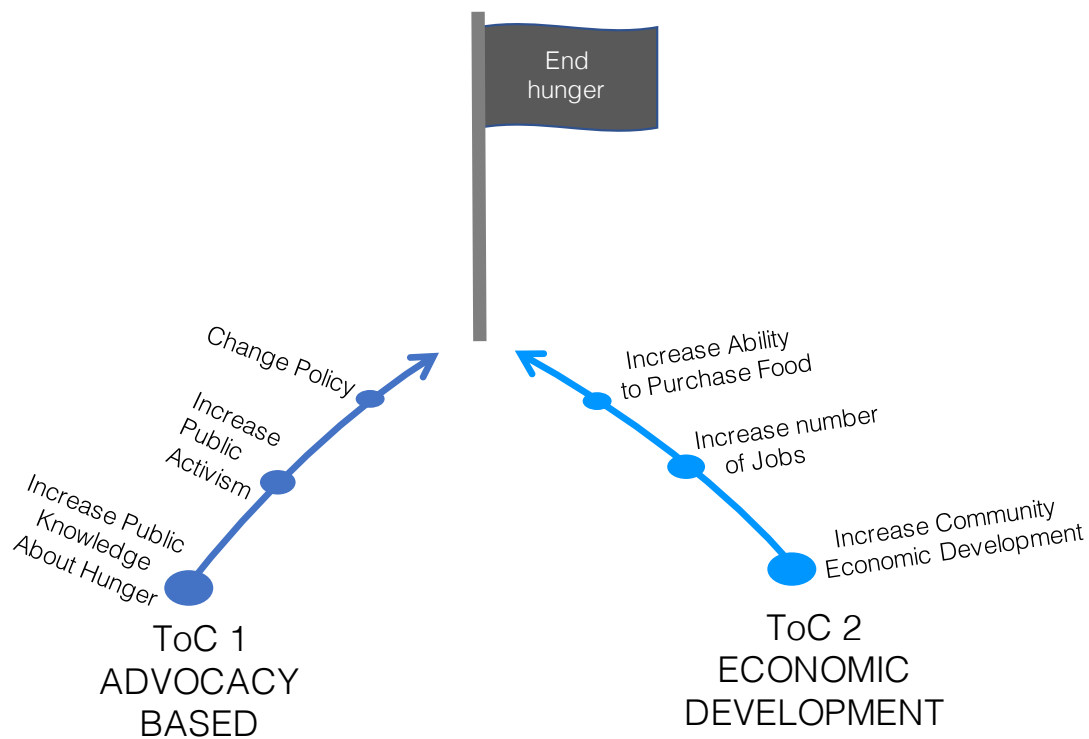
What is a Theory of Change?

Organizations typically can articulate their mission, strategies and activities. However, organizations often struggle with internal consensus or even clarity as to *how* they will achieve their mission. This is where Theories of Change have proven very helpful.

While the foundations of Theories of Change trace back to the mid-twentieth century, the more common concept was introduced to the field of evaluation in the 1990s through different names including *program theory*, *program logic*, and *impact pathways*.[i] A Theory of Change has been defined as the hypothesis about the way that a program brings about its effects (Scriven, 1991). A Theory of Change is an organization's hypothesis of the changes that will occur as it is utilizing its strategies and activities to achieve its mission. It is essentially the logic behind an intervention. The Theory of Change, then, becomes a roadmap, providing pathways of outcomes that lead to the organizational mission.[ii] It causally links inputs and activities to a chain of intended, observable outcomes (Rogers, 2008). It helps the organization identify the assumptions that underlie the hypothesis and track the intermediate outcomes that the organization expects to see as it implements its plan toward achieving its long-term goal (Weiss, 1995).

As the term Theory of Change spread and the tool began to be used, it was often confused with other evaluation tools, most notably Logic Models and Log Frames. Although Theories of Change are often built upon Logic Models, they add extra layers. Theories of Change are richer than Logic Models in that they go beyond the activities that will be carried out and define the assumptions and the necessary and sufficient preconditions for the sequence of interim outcomes needed to reach the long-term goal.[iii]

Theories of Change are often used at the organizational level, depicting how the organization expects to achieve its mission. However, they can also be used at the program or project level. The scope of Theories of Change is dependent on many factors such as the complexity of the context and the timing, interests, and resources of the organization and/or the programs.

Figure 1. Different Theories of Change with the Same Mission

The development of a Theory of Change is a complex, analytical process requiring human resources (internal resources such as staff time and sometimes facilitation by external experts) to review literature, history, and internal and external documentation. There needs to be an iterative dialogue between internal and external stakeholders (Funnell and Rogers (2011) have talked about how much time and resources should be invested in developing a program theory).

Organizations with the same end mission may have different hypotheses regarding how change will happen. For example, two organizations may have a mission to end hunger. One might pursue that aim by working toward policy changes to regulate food prices, which they believe will contribute to ending hunger by making food more accessible. Another organization might use an economic development model, theorizing that educating local businesses on better production methods will increase economic development and will lead to an increase in jobs and greater ability of people to afford food, and thus reach their mission to end hunger.

A caveat about change and bias. Integral to Theories of Change is the process of change. As evaluators, we attempt to capture the change that is happening. However, we must concede that there are areas we may not recognize, acknowledge, or understand as change. In some instances, we may even assume change is happening that is not. Further, we may assume change is happening as a product of our intervention when the actual causes may be altogether different or when our intervention is only partially responsible for that change. Indeed, change happens with or without programs or social interventions[iv]. For example, we may assume that an increase in the number of medical visits for prenatal care is due to an advocacy campaign that encourages pregnant women to see their doctors regularly. However, the changed behavior may have been caused by something not directly related to the intervention such as an increase in the availability of prenatal medical treatment.

As important as it is to tease apart change and its causes, it is also important for evaluators to acknowledge that we insert our own perspectives and values in determining how change is happening and in deciding how to capture and convey that change. It is important to listen to the communities involved in the programs and interventions and to give them voice in the evaluative process (Cousins, 1992). Throughout the process of creating and using a Theory of Change, we should be as transparent as possible, share information whenever possible, and acknowledge our own values and limitations.[v]

Purposes and Stages of a Theory of Change

There are many beneficial purposes for developing a Theory of Change for an organization, program, or project (which we hereafter refer to as an "intervention").[vi] These benefits can be realized at various levels and stages and for multiple audiences.

Organizational leaders may benefit from using a Theory of Change as the basis for testing the strategies to ensure that they are logically sound and, ultimately, to adjust strategies and activities for greater programmatic impact. Theories of Change can also ensure that leadership and staff have a common vision of the organizational pathway to their mission[vii].

Theories of Change can be vital for the staff, guiding them as they engage in their work and consider potential new projects. They can also help with on-boarding new staff. For the communities involved, a well-articulated Theory of Change allows them to better understand the purpose of an intervention and how it is achieving its objectives. The Theory of Change sets out the relationship between the different strategic approaches and organizational teams as well as the communities' own contributions to the mission. For some audiences, such as donors, beneficiaries, partners, and the public, Theories of Change allow for transparency and understanding of the intervention's approach to achieving its mission and/or objectives as well as insights into the ways in which they can link to the intervention or partner with the organization.

An explicit and thoughtfully created Theory of Change provides benefits at each stage of the intervention:

a) *Design stage.* Having a Theory of Change at the design stage can help organizational management better understand the intervention and its contribution to creating impact. During this stage, a Theory of Change makes the design more solid by testing its internal coherence and linking strategies and activities to expected outcomes. Furthermore, a Theory of Change can also clarify and align the understanding of those working on the intervention. A good Theory of Change should have articulated assumptions (see below) so that in

Benefits of developing a Theory of Change	For the Management	For the Staff	For the Target Population	For Other Stakeholders
At the design stage	More solid, coherent, and aligned intervention. Easier to share thinking behind intervention.	Better understanding of the intervention and each team(s)' contributions. More able to provide relevant information that can make intervention more successful.	Greater likelihood of being engaged in the design of the intervention. Greater buy-in and credibility for the intervention. More likely to participate.	Insight provided to additional audiences (e.g., funders, board, constituents, partners) as to what the organization is trying to achieve and how it expects to achieve it.
	Unearthed and aligned viewpoints. Articulated assumptions. Strategies and activities linked to expected outcomes, allowing preparation for their potential occurrence.			
At the implementation and monitoring stage	Easier monitoring. Better and more timely strategic decisions when adapting to emerging issues.	Demonstration of the relational aspect of their work. More intentional execution of work. More learning about work.	Better understanding of the project's intentions, the implications and what can be learned from the work being implemented. Increase in credibility. Greater willingness to participate.	Progress monitored against articulated outcomes as intervention is implemented. Input provided. Learning gained and shared. More full collaboration.
	Specific outcomes measured internally and in real-time.			
At the evaluation stage	Easier to trace causes if outcomes are not achieved. Strategic learning provided for adjusting current strategies and activities as well as future interventions.	Easier to understand the evaluation approach and methods, allowing for greater participation in the evaluation and interest in using the results.	Possible improvement in participation rates and overall quality of the evaluation. More accountability towards the organization's use of the evaluation results.	Better understanding of successes and challenges of approach. Able to gain from and contribute to learning and strategic decision-making.
Regarding the impact of the project	Easier to check alignment with organization's mission.	Staff able to understand their contribution to the mission.	Learning for the community. Greater impact.	Learning for the field.

Figure 2. Benefits of Developing a Theory of Change

Elements	Description	Also mentioned as	Examples
Impact	Ultimate change that the intervention seeks to achieve. It is the final change to which all of the activities, strategies, outputs, and outcomes lead.	Mission, Goal, Ultimate Outcome	More children graduate from school with a meaningful and valuable education.
Outcomes	Changes that result from the activities and are seen along the way to Impact. Sometimes listed as short, intermediate and long term. These are steps along the way to Impact that the organization believes will need to occur for the Impact to happen. Usually in comparative form (e.g., more, less).	Changes, Specific Objectives, Results	Better trained[9] teachers; better equipped schools. More effective teaching.
Outputs	Immediate effects and results of the activities. Description of services/products in terms of size and scope that result from the activities. Often in numerical form.	Products, Immediate Results. Often confused with Outcomes	One hundred teachers attended training course and upgraded their teaching practices; staff met with 20 legislators.
Strategies	Approaches that the program is going to use. The set of actions (rolled into a strategic approach) that are going to trigger the change.	Actions, Sets of Activities	Advocacy campaign to increase government funding. Capacities reinforcement.
Generic causal links	Simplistic depiction of cause-effect relationships among elements using arrows. They provide the reader an indicator of the causal order of and relationship between different outcomes that are caused by the strategies and activities.	Lines and Arrows.	The arrow between the outcome "Better trained teachers" and the impact "More children graduate from school with a meaningful and valuable education."

Figure 3. Basic Elements of a Theory of Change

designing an intervention, the designers can consider and monitor the assumptions. Using a Theory of Change at the design stage can also provide valuable information about how the intervention will contribute to the change and how and why it is expected to function. More broadly, designing a Theory of Change can add clarity to external stakeholders about the value of their roles, allowing for an explicit conversation about the expectations and degree of their involvement.

b) Implementation/monitoring stage. Once the intervention is implemented and monitoring is initiated, a Theory of Change can allow the stakeholders involved in the intervention to know the short-term, intermediate, and long-term

Elements	Description	Also mentioned as:	Why this element is necessary	Examples
Specific causal links	Nuanced depiction of relationships among elements using lines and arrows. Recognition that reality is not linear even though certain strategies are clearly meant to produce certain outputs. Recognition that not every strategy influences every result.	Differentiated lines or arrows that link specific elements.	Better understanding of the pathways, timing, and links among outcomes.	Meetings and sharing evidence with policy makers will influence their decisions and budget allocation. Training teachers will influence teachers' performance.
Mechanisms	Causal chains that explain how and/or why one action provokes another one.	Causal strand, causal pathway	Explanation of why the actions are going to trigger the expected results. Not just by the "magic of the arrows."	Advocating with supportive data, reasoning and public support polls will make policymakers give education higher priority. Better knowledge and competences will make teachers feel motivated and empowered and lead them to introduce changes in their way of teaching.
Assumptions	Belief that is accepted as true or taken for granted.	Hypothesis or Preconditions	Analysis of the risks of something external that affects the chain.	Data and facts presented to policymakers influence their decisions.

Figure 4. Distinctive Elements of a Theory of Change

outcomes expected to be triggered by the organization's strategies and activities. As staff gain knowledge about the links between the monitoring role they fill and the organizational outcomes expected, they are often able to provide more accurate and timely data. This real-time data can lead to valuable organizational adjustments in strategies and activities as necessary to improve the intervention's impact.

c) Evaluation stage. A clear, well-formulated Theory of Change provides the evaluator vital information and understanding of the theoretical underpinnings of the organization's approach, strategies, and activities. Thus, it provides a foundational base, allowing the evaluator to go beyond just evaluating whether the outputs and outcomes were achieved to considering the "why" – i.e., why were the intervention's outcomes achieved or not achieved? This facilitates the organization's strategic learning and provides the organization

and funders the opportunity to go beyond a "proving" mind-set (i.e., did the intervention meet the metrics) to one that seeks to improve.

The benefits to Theory of Change audiences at different stages are captured in Figure 2 (above).

Most Commonly Included Elements in a Theory of Change

In reviewing the literature and examples of Theories of Change, and noting again that there is great variation, we found that the most commonly represented elements in current Theories of Change include Impact, Outcomes, Outputs [viii], Strategies, and Generic Causal Links (see Figure 3 above)

Elements that Should Be Included in a Robust Theory of Change

In addition to the elements described in Figure 3 above (Impact, Outcomes, Outputs, Strategies and Generic Causal Links), we believe that a *strong*[ix] Theory of Change should also routinely include the following elements: Specific Causal Links, Mechanisms, and Assumptions. Although these elements already exist in the literature and are sometimes included in Theories of Change, we are proposing their routine inclusion. The addition of these elements adds depth, articulates complexity, and increases the usefulness of a Theory of Change (see Figure 4 above).

The Specific Causal Links, Mechanisms, and Assumptions of a Theory of Change provide added depth allowing for a deeper understanding of what is necessary, and what must be avoided, for a Theory of Change to successfully achieve its impact.

Differentiating a Theory of Change from Other Organizational Tools

Theories of Change often overlap and are confused with other organizational tools. Boundaries frequently blur because there is no consensus as to what makes a specific tool qualify as one and not the other. The most common tools confused with Theories of Change and their differentiating characteristics are noted below.

	PROJECT SUMMARY	INDICATORS	MEANS OF VERIFICATION	RISKS / ASSUMPTIONS
Goal	10% increase in the number of Grades 5-6 primary students continuing on to high school within 3 years.	Percentage of Grades 5-6 primary students continuing on to high school.	Comparison of primary and high school enrolment records.	N/A
Outcome	Improve reading proficiency among children in Grades 5-6 by 20% within 3 years.	Reading proficiency among children in Grades 5-6	Six monthly reading proficiency tests using the national assessment tool.	Improved reading proficiency provides self confidence required to stay in school.
Outputs	500 Grade 5-6 students with low reading proficiency complete a reading summer camp	Number of students completing a reading summer camp.	Summer camp attendance records.	Children apply what they learnt in the summer camp at school.
Activities	Run five summer reading camps, each with capacity for 100 Grades 5-6 students.	Number of summer camps run.	Summer camp records.	Parents of children with low reading proficiency are willing to send them to the camp.

Figure 5. Log Frame Structure. Source: Murray (2016).

LAYERS OF A THEORY OF CHANGE
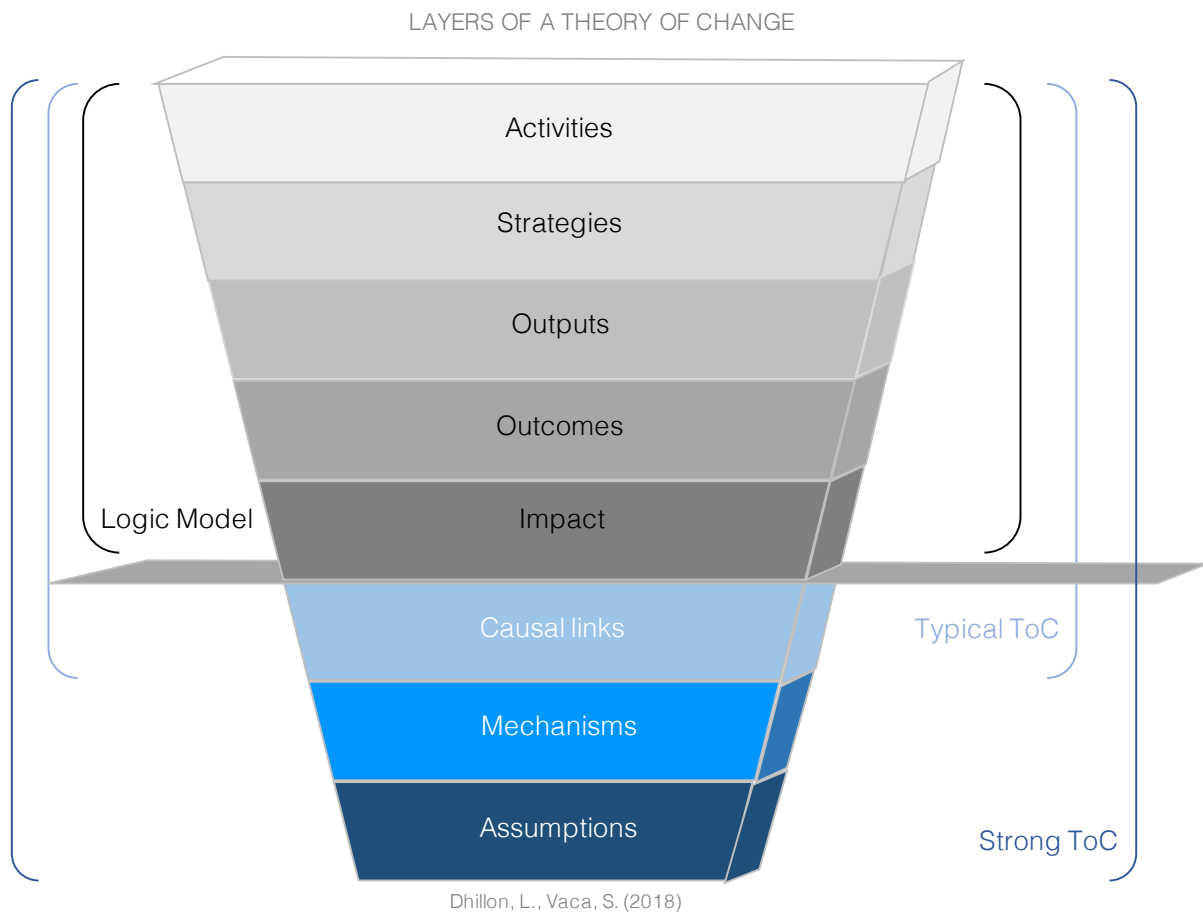

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Figure 6. Layers of a Theory of Change

Log Frame Matrix. In the 1990s, the Logical Framework Approach[x] was widely used as a tool for designing, planning, monitoring, and evaluating interventions in the development sector. The approach is a participatory process that includes several phases such as Stakeholders analysis, Problem analysis, Causal-effect analysis and Alternatives analysis.

The output of this process is summarized in the Logical Framework Matrix that consists of a matrix with four columns and four to five rows (see Figure 5 above). In the figure, the first column presents the hierarchy of Activities to Goal that needs to occur for the project to succeed; within it are the Outcome, the Outputs, Means and Resources. In the figure, the remaining columns detail Objectively Verifiable Indicators, Means of Verification and Risks/Assumptions.

The log frame has a vertical "logic" so it is read from bottom to top, as if activities were carried out, the output reached, the outcome attained, and the goal achieved. The matrix, though comprehensive, has some limitations in that it doesn't show causal relationships between elements and lacks a temporal dimension. Overall, it conveys little depth and complexity.

Logic Model. In the last decade, many social change organizations have been using a simplified evolution of the Logical Framework Matrix – the Logic Model. A Logic Model typically includes activities, outputs, outcomes, and overall impact. Sometimes a Logic Model also includes strategies and indicators.

Theories of Change and logic models are often used interchangeably. Theories of Change are actually built upon logic models. They add extra layers as noted above. Unlike Logic Models, Theories of Change are richer in that they go beyond the activities that will be carried out and explain how the Results will be achieved. Theories of Change provide detail as to the theory behind the intervention. Theories of Change additionally add causal strands that demonstrate the linkages

between outcomes over time. Further, the process to develop Theories of Change seems to be deeper and more participatory than Logic Models, often involving desk review, interviews, workshops, focus group discussions, and other methods until its final configuration.

Strategic Plans. Strategic Plans typically are one- to five-year plans that map out an organization's strategies and the implementation of those strategies through activities and resource allocation. An organization's Strategic Plan articulates the direction of the organization, the strategies to be used, and the organizational priorities. Strategic Plans most often include the organizational Mission, Goals/Objectives, Values, Principles, Strategies, Activities, and Strengths, Weaknesses, Opportunities and Threats (SWOT Analysis) (Hill, Westbrook, 1997).

Theory of Action. A Theory of Action is the delivery model for a Theory of Change. A Theory of Action is the operationalisation of the Theory of Change of a specific program or intervention. These tools are implementation theories and illustrate how a program is constructed to 'activate' the Theory of Change. Sometimes Theories of Action are created for only certain parts of a Theory of Change. Theories of Action follow the same logical structure as Theories of Change: sequential, with causal steps leading to the long-term goal of a program.

When producing a Theory of Action, it is crucial to differentiate between the settings in which change will happen (the Theory of Action) from the change mechanisms themselves (the Theory of

Change). But both remain inter-related: a Theory of Change and a Theory of Action are intertwined parts of the same logic. Theories of Action are relatively new in the field and, similar to Theories of Change, they are not yet consistent in form or purpose.

Summary

Our review of Theories of Change and our belief about their next evolution is summarized in Figure 6 (above).

Figure 6 shows the interplay among the elements that are commonly used in Theories of Change; the elements necessary for a strong Theory of Change; and the ways in which a Theory of Change is differentiated from a Logic Model, the organizational tool with which it is most commonly confused.

Proposed New Elements to be Included in Theories of Change

We propose Theories of Change include the elements described in this section, as they allow for more information, complexity and depth.

More Meaningful Causal Strands

Theories of Change typically have singular, linear causal stands that connect one outcome to another. However, programs in actuality often require not just one, but simultaneous causal strands to achieve their goal. Sometimes program designers are not entirely sure which strategy will best succeed in achieving the desired impact, so alternative courses of action might be envisioned. These require different causal representations in Theories of Change. The following strands should be included in a Theory of Change: Direct and indirect effects; spurious components (two effects having the same cause); interactive relationships among causes; suppressors (elements that eliminate or reduce an effect); simultaneous or correlational causes; and reinforcing or mitigation loops. To provide deeper understanding of the Theory of Change, the causal strands could contain information and even be of different sizes and types (see "unintended or unexpected effects or results" below).

Area of Accountability

Another proposed Theory of Change element is the addition of an "area of accountability" that identifies additional outcomes that are necessary for the intervention to work in order to achieve the mission but for which the organization does not hold itself accountable.

For example, let's take an organization that has as its mission is to create a better life for immigrants within a specific country (see Figure 7). The organizational theory is that by creating positive narratives about immigrants (i.e., media content), the media in that country will pick up that content, and that media coverage will lead to public acceptance of and positive behaviour change toward immigrants. This, their Theory of Change contends, will lead to increased pressure on legislators to change immigration laws which will lead to changed legislation and policies and, ultimately, will result in better lives for immigrants.

In this example, it may be that the organization

holds itself accountable only to the change in public acceptance of and behaviour toward immigrants. This is perfectly sufficient. The organization can designate in their Theory of Change graphic the outcomes for which they are responsible and those that they are not (see the simplified Theory of Change diagram). So, while an organization should include all of the outcomes they think are essential to their Theory of Change's logic, it can hold itself accountable for only *some* of the outcomes.

Unintended or Unexpected Effects or Results

An intervention is always implemented in order to achieve certain results or changes. However, the intervention can often have other unintended or secondary consequences. Acknowledging these other effects is an ethical question that program managers and evaluators should always take into account. The addition of foreseeable effects into the Theory of Change, even those that are not positive or the ones intended, can add quality and robustness.

There are important reasons why discussing unintended consequences in evaluation research is critical (Bamberger, 2015). These might include positive unexpected effects such as people beyond the target group being indirectly benefited, or negative unintended effects such as the initial success of the intervention resulting in public funds being diverted to other social issues.

Let us look at a specific example. Assume an intervention addresses chronic absenteeism by working with a group of parents to get their children to go to classes every day. This intervention may have the positive, unintended effect of other children also attending classes (because their friends are). As a result of higher attendance, however, the intervention could have the negative effect of increasing teachers' stress levels because they are working with a greater number of students. The teachers' high stress could lead to worse outcomes for the children. The organization's Theory of Change could include these unintended effects, so that the program staff are alerted to watch out for those unintended effects, especially the negative ones, during the intervention's implementation.

Theory of Change Rubric

When developing a Theory of Change there are many dimensions that need to be considered. The *ideal* level of inclusion of each dimension will depend on the purpose of each Theory of Change
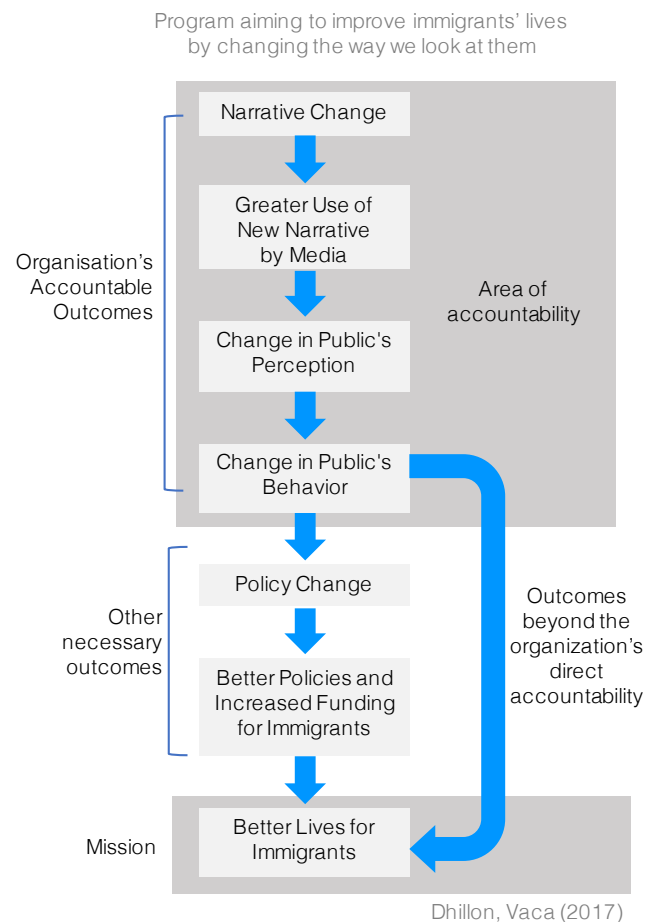

Figure 7. Area of Accountability in a Theory of Change

and its context (scope, timing, participants). Without attempting to be too prescriptive, there are some characteristics that are generally more desirable than others in a strong Theory of Change. We understand "strong Theories of Change" to include those which have a smaller probability of *theory failure:* the intervention was poorly conceived and didn't work in practice (Patton, 2015). Also, a Theory of Change is strong when it is correct to anticipate that the result of the sequence of activities can logically be expected to lead to program success (Alkin, 2011).

A rubric that shows the potential dimensions to assess in a Theory of Change and suggestions for the scorings is provided (Figure 8, below).

It is usually agreed that basing an intervention logic in evidence such as studies, previous experiences, etc. is better than defining an intervention logic based on one individual's perceptions (Funnell & Rogers, 2011).

DIMENSIONS	Weaker Theories of Change	Stronger Theories of Change
Level of Evidence base	*Opinion-based:* Theories of Change based on non-systematic inquiry (e.g., a gut feeling; generalizing from a few cases).	*Evidence-based:* Theories of Change based in relevant critical analysis conducted in a systematic manner before reaching conclusions.
Causal links	*Implicit causal links:* Cause-effect relationships are vague or oversimplified.	*Explicit causal links:* clear indication of which elements are caused by/result from which elements.
Representation accuracy	*Over-simplified:* too few elements for a complex intervention. *Over-detailed:* too many elements for a simple intervention.	*Sufficiently detailed:* correlation between the intervention's and Theories of Change's complexity.
Precedence	Innovative: New intervention logics not often tried or previously tested.	Tested: Logic previously proven or demonstrated to lead to the expected outcomes.
Visual relevance	All elements are in boxes of the same size, regardless of relevance or importance.	More important elements are visually bigger or brighter and less important elements are smaller or lighter.
Participation levels	Limited: Theories of Change developed as internal, technical tools within the organization by small group of people who may not have deep knowledge of intervention.	Broad: Theories of Change developed by wide group of stakeholders with diverse perspectives and an aggregated deep knowledge about how a program works.

Figure 8. Rubric of the Robustness of a Theory of Change
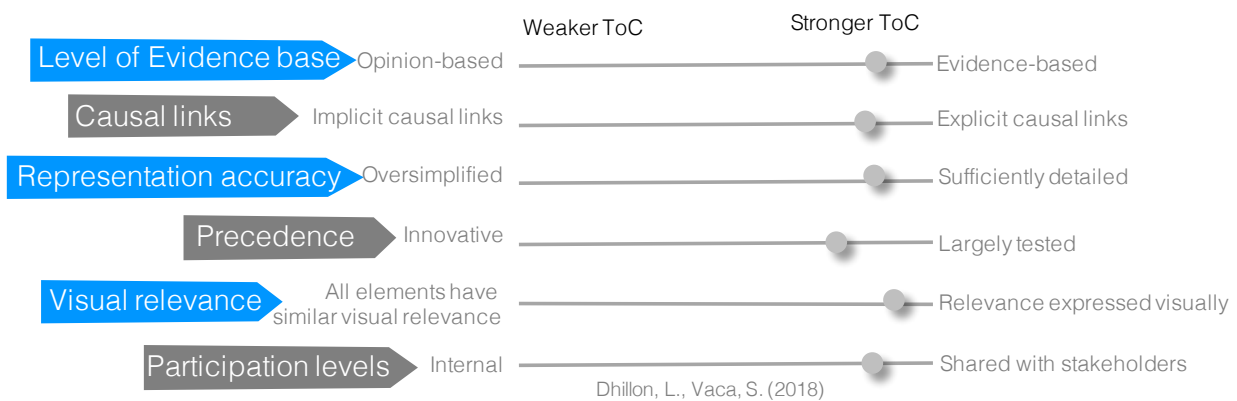
RUBRIC OF ToCs ROBUSTNESS SPECTRUM

Figure 9. Rubric of Theories of Change Robustness Spectrum

Similarly, but in another dimension, a Theory of Change will be more sound when it previously has been tested extensively in contrast to a theory that is being implemented for the first time.

As mentioned above, specific causal links are also central in Theories of Change. A Theory of Change that provides explicit indication about which elements are supposed to cause certain effects is more desirable than one that indicates the elements without clearly specifying the relationships among them.

Preferable as well is a Theory of Change that explains the change in detail rather than one that is too synthesized and lacks sufficient elements. However, in a highly complex intervention, synthesis may be preferable to excessive detail.

Another desirable characteristic for a Theory of Change is to provide some information about the relative importance of each strategy, output, and outcome. Although these elements may look equally relevant and important in typical Theory of Change representations, in reality, some of them will have more weight than others. A stronger Theory of Change will represent these differences.

Lastly, a strong Theory of Change can be elaborated in a participatory way by inviting a range of stakeholders to contribute. Such a Theory of Change is normally stronger than one that has been developed only by the organization's staff and/or management. The involvement of beneficiaries in the Theory of Change process strengthens and increases transparency and credibility.

Here we present a rubric as a way of visualizing the robustness of a Theory of Change based on the above characteristics (see Figure 9).

Organizations can use this simple tool to assess the robustness of their Theories of Change. By using this rubric throughout the process, the organization can visually assess the strength of its Theory of Change and discuss which trade-offs the organization is willing to make and, if necessary, return to the design stage if any elements need strengthening. There is no one "right" configuration for the rubric. Rather, the organization's context determines where each organization's Theory of Change lands on each characteristic on the rubric's spectrum. For example, an organization that is trying out a new theory and that values participatory approaches and consensus may want to be on the strong end of Participatory Level spectrum and be willing to be low on evidence-based and innovation. Likewise, an organization that has been successful for decades with the same theoretical approach in its Theory of Change may be willing to be low on Causal Links and Representation Accuracy but high on the Evidence Base and Internal Level.

Additional Elements that Could be Considered

After the analysis of numerous Theories of Change, we noticed several other notable elements that, depending on an organization's circumstances, may be of value to include. We do not consider them necessary to a strong Theory of Change but list those additional elements here so that organizations may consider them for inclusion (see Figure 10)

The designers of an organizational Theory of Change should consider the addition of these

ADDITIONAL ELEMENTS	DEFINITION
The Problem Statement/ Needs of Beneficiaries	Initial situation or issue the intervention seeks to solve or address. Also called *Situation Analysis* (Funnell, Rogers, 2011).
Resources/ Inputs	Inspired by the Logical Framework Approach, these elements typically include financial and staff resources.
Processes/ Structure	Elements of an organization such as its culture, how it operates, its installations, its internal policies, and other influential factors.
Indicators	More typically used in a measurement plan, these elements typically indicate whether, and to what degree, a result has been achieved. They are the things that can be seen, heard, read, etc. that let you know if that outcome has occurred.[12]
Risks	Events that could prevent the intervention from being successful. Unlike a typical financial investment that involves a balance of risks with potential return on investment (ROI), the social sector typically does not articulate risks in Theories of Change. However, we see a trend for considering and including risks in the Theory of Change, especially as the field of Impact Investing[13] grows.
Perspectives/ Boundaries/ Relationships	These are the main elements of a Systems Thinking approach and can be valuable when introducing the complexity of the social change in A Theory of Change.
Operational Work of the Organization	Some Theories of Change include the operational work of an organization (e.g., internal functions such as fundraising, fiscal management, human resources, capacity building, knowledge management, evaluation, etc.). In other cases, organizations may create altogether separate Theories of Change for their internal and operational work.
Values/ Principles	Explicitly accepted rules or approaches that are shared within the organization and that define the culture.
Context	Circumstances that configure the setting that motivated the intervention and in which it takes place. Sometimes referred to as Bottlenecks.

Figure 10. Other Possible Elements in Theories of Change
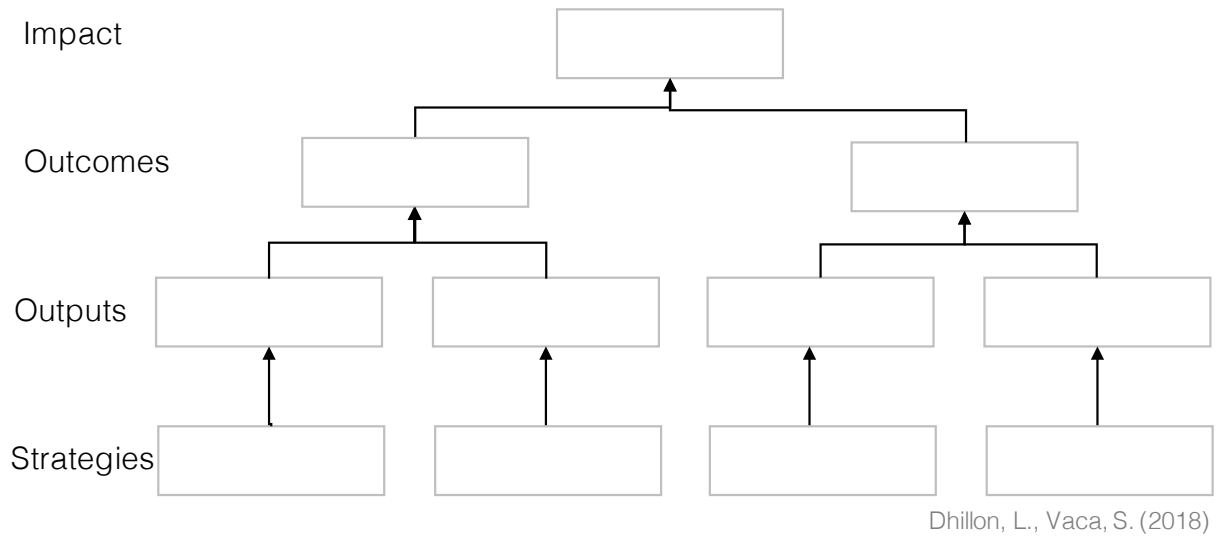
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Figure 11. Common Visual Presentation of a Theory of Change

elements depending on the context of the intervention and need for additional detail.

Ways of Presenting Theories of Change

Common Ways of Presenting Theories of Change

As mentioned above, there are no well-established rules for the elements of a Theory of Change. Similarly, though there are some commonalities in the way Theories of Change are presented, there is no standard form of representation of Theories of Change. Indeed, a wide variety of models and templates have proliferated. Among the wealth of different free-style formats that can be found, the similarities that are often present include its representation as a one-page illustration or diagram. Theories of Change are also often inclusive of a narrative and contain an If→Then structure. Often, each element (such as each of the strategies, outputs, outcomes) is represented in a separate box, with those boxes routinely of the same size, aligned either vertically or horizontally and organized in a linear fashion. When causal links are explicit, they are usually linear and represented by arrows.

In analyzing publicly published Theories of Change and considering the consequences of the above-mentioned choices, we observed some other common characteristics and some issues that arise from those characteristics.

a) There is little correlation between the level of complexity of the intervention and its presentation. Theories of Change are simplified representations of the often-complex reality. However, a certain level of coherence should be assured between the level of complexity of the intervention and its visual representation. Relatively complex interventions should not be represented in a too simplistic way, and vice versa.

b) All elements are represented as equally relevant. Theories of Change usually present outcomes at one extreme of the model (often the top, the bottom or one of the sides), but usually they are of relatively equal size so they appear to have the same weight and significance. Giving them the same size fails to account for differences among outcomes that can be discerned such as that some outcomes are more critical than others; some are more relevant to the organization's mission; some are more important in terms of magnitude (expected impact); and some might be easier to achieve than others. Yet, differences in relevance that could be included are not typically presented in the visual diagram.

For each category of elements (strategies, outputs, and outcomes), different dimensions could also be highlighted. Every intervention usually has a major strategy such as resources, time, or strategic importance that is supported by minor ones. When Theories of Change do not capture these differences, they make every line of action look the same.

		Simple	Complicated	Complex
		Less than 10 elements	More than 10 elements and many arrows or signs.	More than 20 elements
Simple	One actor, one objective	OK		
Complicated	several actors, several objectives	OK	OK	
Complex	multiple decision-making organs, emerging objectives		OK	OK (though challenging)

Figure 12. Relationship Between Intervention Complexity and Theories of Change

c) *Interventions appear in a linear time frame.* These representations present interventions in a linear because this is the way time is perceived to flow (Duignan, 2016). That partially explains why many models misrepresent the messy way events often unfold, though this does not help with understanding the intervention.

d) *Simple linear causal strands do not account for complex causes.* The causation links between elements in Theories of Change are sometimes simple but, more often, simultaneous causes are needed for an effect to occur. Moreover, not all causes are equal. Some of them are ground-setting causes (necessary but not sufficient), while others trigger the whole effect (Befani, 2010).

e) *Mechanisms are usually not present.* Mechanisms are a key part of Theories of Change. In fact, they are one of the distinctive elements that differentiate them from Logic Models (Theories of Change are supposed to include mechanisms meanwhile Logic Models are not). But mechanisms are often missing from Theories of Change because of (1) a misunderstanding of the concept of mechanisms – still treating the interventions as a black box; and (2) lack of clarity in the representation due to there being no specific conventions to easily represent or identify them. Opaque arrows would link activities with outputs and outcomes.

The overall conclusion of these findings is that Theories of Change often include far less information than they potentially could and that the inclusion of these additional elements could add substantial benefit.

New Ideas for Upgrading the Presentations of Theories of Change

Below, we present some alternatives to the current practices of presenting Theories of Change. These alternatives can provide practitioners with new resources and inputs to include and complement present versions of Theories of Change, overcoming some of the findings presented in the previous section:

a) *Consider the level of complexity in the Theory of Change.* As often pointed out by Rogers (2015), we need to give careful consideration to the theoretical models that represent interventions so that complex interventions are not oversimplified or simple interventions overcomplicated. Even though it is advised to analyse the complexity of the different aspects of the intervention separately (Rogers, 2007) to understand which parts of the intervention are actually bringing complexity, for our purposes we will generalize the level of
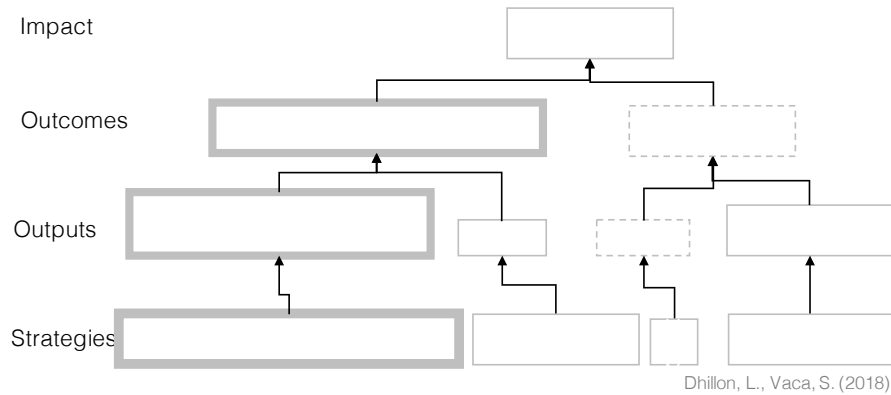
Impact

Outcomes

Outputs

Strategies

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Figure 13. Representing Importance of Theory of Change Elements Using Size

Activities/ Strategies → Outputs/ Results → Outcomes/ Impact
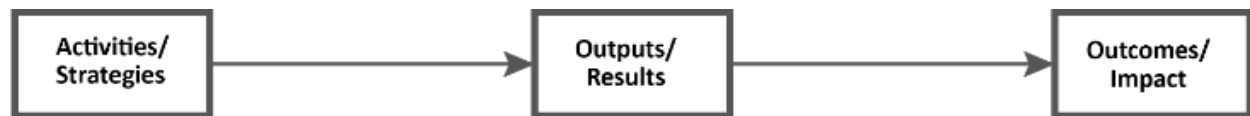
Figure 14. Typical Way of Representing Causal Links

Activities/ Strategies → Mechanisms → Outputs/ Results → Mechanisms → Outcomes/ Impact

Activities/ Strategies → Mechanisms → Outputs/ Results → Mechanisms → Outcomes/ Impact
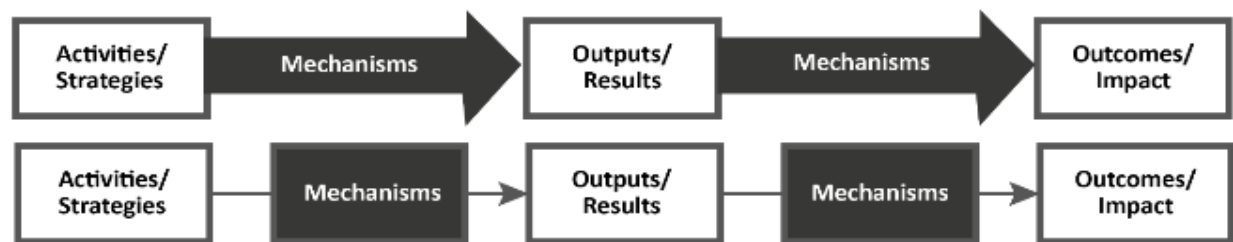
Figure 15. Idea for Representing Mechanisms

Flour, salt and water are mixed and kneaded → Proteins bond due to water. Yeast feeds on sugars. Water stocked in starch granules. → Punch until Elastic Dough → Gluten network formed. Water evaporates, loose carbon dioxide. Starch stabilised, crust formed. → Baked bread

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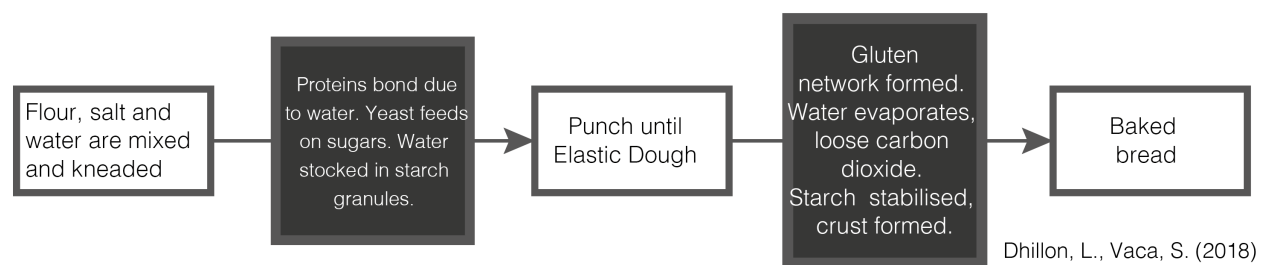
Figure 16. Theory of Change for Baking Bread

Seed, soil, water, sun → Increase of metabolic activity within the seed. Enlargement of the seed, due to intake of water seed's covering may wrinkle and crack → Seed germinates → Plant launches sprouts with tiny leafs to explore and detect light. The embryonic root (called the radicle) emerges from the seed and begins to grow down into the soil. The shoot (plumule) also emerges, and grows upward out of the soil. → Plant grows

Assumptions: sufficient water, oxygen, and an appropriate temperature

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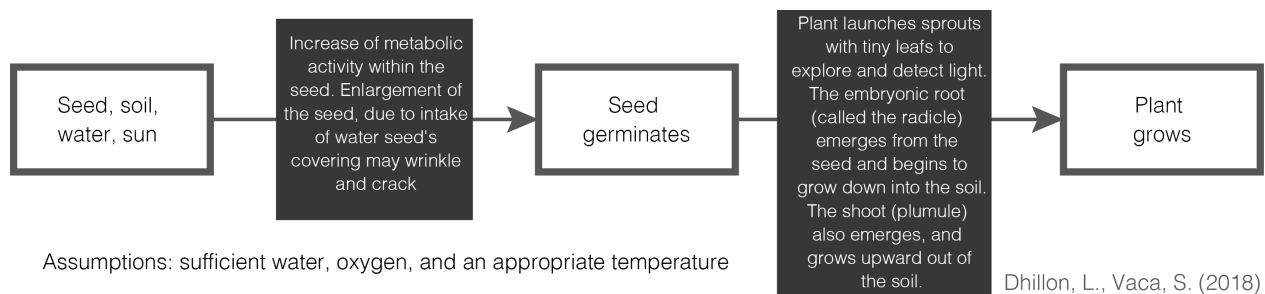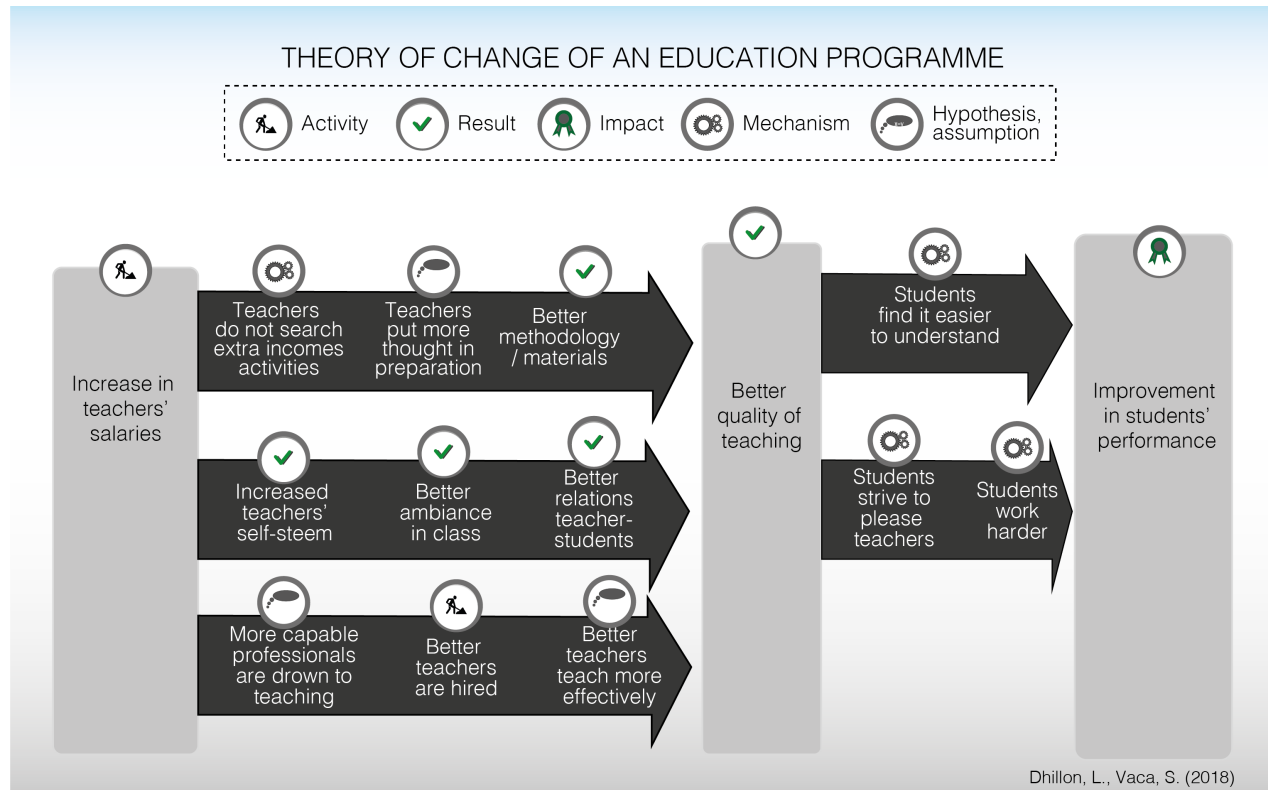*Figure 17.* Theory of Change for How a Plant Grows

Figure 18. Theory of Change of an Education Program.

a very simplistic classification of interventions (into simple, complicated and complex interventions), we explain below how the different levels of complexity in a given intervention relate to the possible levels of complexity of the corresponding Theory of Change. Specifically, the different scenarios are set out in Figure 12.

The cases represented by "OK" imply an adequate coherence between the intervention and the model, which is considered to be desirable. However, the cells that show a darker shade are considered to be inadequate as their model would be somehow misleading.

b) Represent visually the importance of each strategy. Not all actions in the program are equal. Every program usually has a major strategy, supported by other minor ones. However, typical Theories of Change do not seem to capture these differences, making every activity look the same.

We suggest using *pre-attentive visual features,* such as: size, bold fonts, colors, hues, or weight of the arrows to depict those differences.

Theories of Change often present Outcomes at the top of the model, but usually they are treated equally. Some of the outcomes are more critical than others, more relevant for the organization's

mission, more important in terms of magnitude, easier to achieve, or faster. Still no sign of those differences are presented in the visual model. We suggest the model use different visual features such as size, thickness of box outline, or hue to emphasize the most relevant outcomes.

c) Include more information in the Causal Links. The arrows could incorporate the strength of the causation. Playing with this initial disposition, and adding some icons to differentiate the type of information gathered in each box, the graph starts being more informative. Also, analyzing the type of causality that links one box to another, we realize all of them are spurious relations, in the sense that they do not fulfil the "sufficient and necessary" requirement.

Another way of incorporating more precise information within a Theory of Change is to have a deeper knowledge and display of the specific causation relationships between the Theory of Change's elements, regarding, for example, their necessity and sufficiency.

Other types of causality that could be represented besides direct relationships are causal
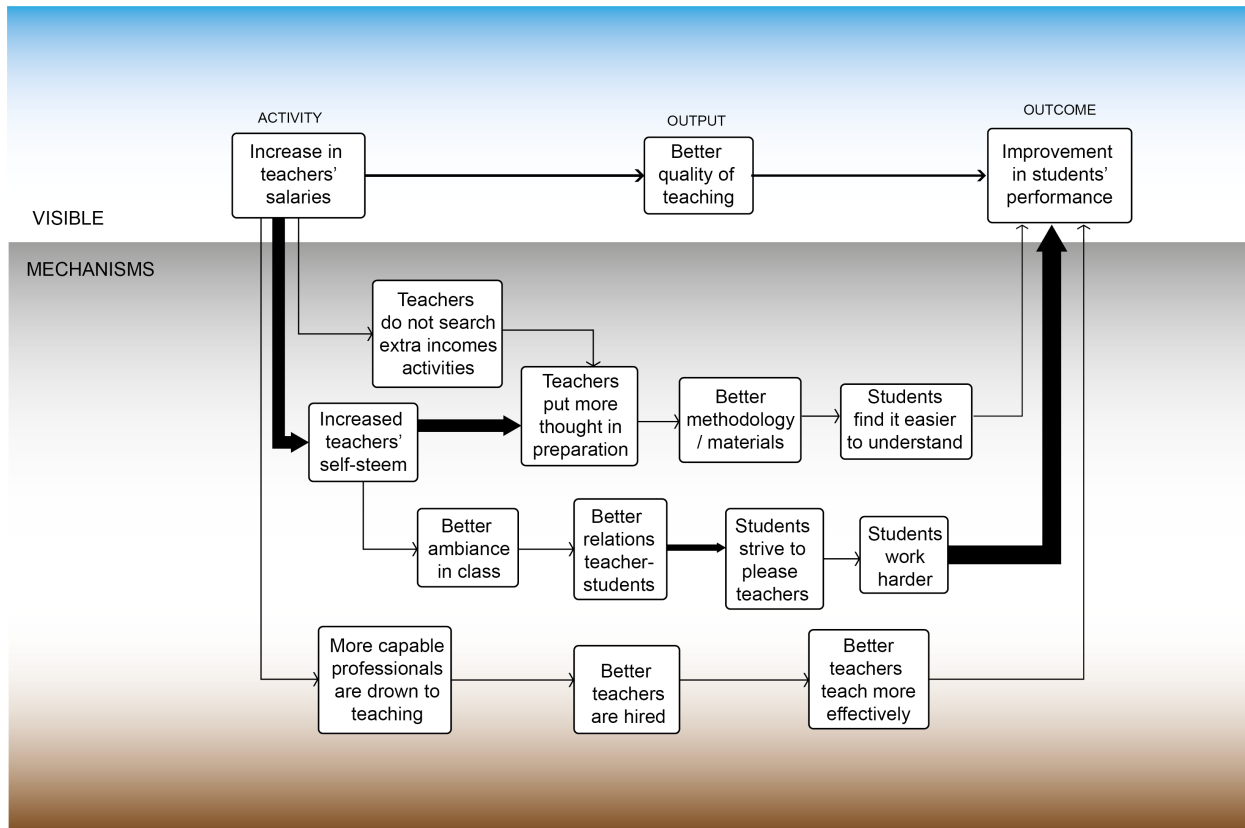
Figure 19. Mechanisms Below the Surface

relationships of mediation or moderation, among others.

d) Make mechanisms more transparent. Mechanisms are commonly not included in the diagram; their presence is implicit in the lines or arrows linking elements (see Figure 14). But since mechanisms are one of the major distinctive features of a Theory of Change, they deserve an illustrative way of presenting them.

This could be done by making the arrows thicker and specifying the mechanisms within them (or adding intermediate boxes between elements) as shown in the figure 15.

In figure 16, the white boxes represent the activities to be carried out in a recipe for baking bread, and the black boxes between elements show the mechanisms triggered by the actions. The cook may not to know or think about these underlying mechanisms, but they are the explanation about why those actions will produce bread.

Similarly, in Figure 17 the text in the black boxes describes the Mechanisms at play when a change occurs, in this case, the growth of a plant.

In the last example, the Theory of Change of an Education program for improving students'

performance by increasing teachers' wages includes simultaneous, causal potential pathways that link the activities with the intended aim (see Figure 18).

Opaque arrows would link activities with outputs and outcomes. By making them "transparent" and showing what might be inside, we would make a Theory of Change stronger.

A final way of representing mechanisms is adding the causal chains and loops *below the surface*, where we would present the logic frame chain of results (see figure 19).

Using Technology and Creativity in Theories of Change

While the key to Theories of Change is their content rather than their representation, there are advances in technology that provide unprecedented opportunities for depth, interactivity and even automatization in the design process. Microsoft PowerPoint and Adobe Illustrator are the most popular and, especially when accompanied by a narrative, are sufficient.

There are now many additional programs and applications that can offer different methods and opportunities for customization. While there are a plethora of options, a few are noted here, many of which are free[xi]:

a) **Coggle** is an online tool for creating and sharing mind-maps. https://coggle.it/
b) **DoView (Visualizing Outcomes)** is a visual strategic planning and outcomes tool. http://doview.com/t/ta-0022-children-in-care.html
c) **Draw.io** is an online diagram editor. https://www.io/
d) **Duarte Diagrammer** is a data visualization tool with thousands of customizable diagrams. http://www.duarte.com/diagrammer/
e) **Fiverr** allows you to hire someone at various cost-levels to design images for you. https://www.fiverr.com/
f) **Loopy** is an interactive simulation tool. http://ncase.me/loopy/
g) **Lucidchart** is a diagramming and visualization tool. https://www.lucidchart.com/
h) **Omnigraffle** is a diagramming and digital illustration application. https://www.omnigroup.com/omnigraffle
i) **Scapple** is a free-form mind-mapping tool. https://www.literatureandlatte.com/scapple.php
j) **Sway** (is a digital storytelling application. https://sway.com/
k) **Theorymaker** is an online tool for creating causal diagrams. http://theorymaker.info/
l) **TOCO,** standing for Theory of Change Online, is an application that allows people to create Theories of Change online. http://www.theoryofchange.org/toco-software/
m) **VUE (Visual Understanding Environment)** is an open source concept mapping application based at Tufts University. http://vue.tufts.edu/about/index.cfm

In addition to the advances in technology, there has been significant growth in the number and types of social change organizations (e.g., social enterprises) using Theories of Change. Also, an increasing number of sectors such as the arts sector are using Theories of Change. For some of these organizations and sectors, a flat, one-page Theory of Change may feel too linear, uncreative and constraining. The point of a Theory of Change is less about form and all about substance.

Alternative, creative ways can be perfectly adequate in creating and presenting Theories of Change, which can be multidimensional and need not even be written documents. For example, a Theory of Change can be presented in a mobile format with the strings serving as the causal links connecting one mobile outcome to another. Another option is the use of holograms to give the Theory of Change a feeling of more depth and a sense of how different viewpoints can inform the reader's understanding.

Similarly, the creators of an organization's Theory of Change could produce a video or play – perhaps acting out or filming the outcomes with narration as the causal connections between the different scenes. Even poetry can serve as a Theory of Change. These creative forms of Theories of Change can be uploaded to the organization's website for viewing by the public and partners. They can be played out at community events and/or provided along with grant requests. The main focus should be to develop a Theory of Change with the key elements and in a format that is understandable and accessible for the audience and reflective of the organization's style.[xii]

Aligning Theories of Change with Other Organizational Tools

Theories of Change are one of the tools that organizations utilize to articulate the organization's work, strategies, and processes. We believe a Theory of Change should be part of an integrated organizational tool *system*, while undergirding all other organizational tools. When changes are made to one tool, the potential effect on the others should be considered. Indeed, Theories of Change offer the most powerful benefit when they are linked closely to the organization's other strategy tools. Some of the most common tools are detailed in Figures 20(a) and 20(b).
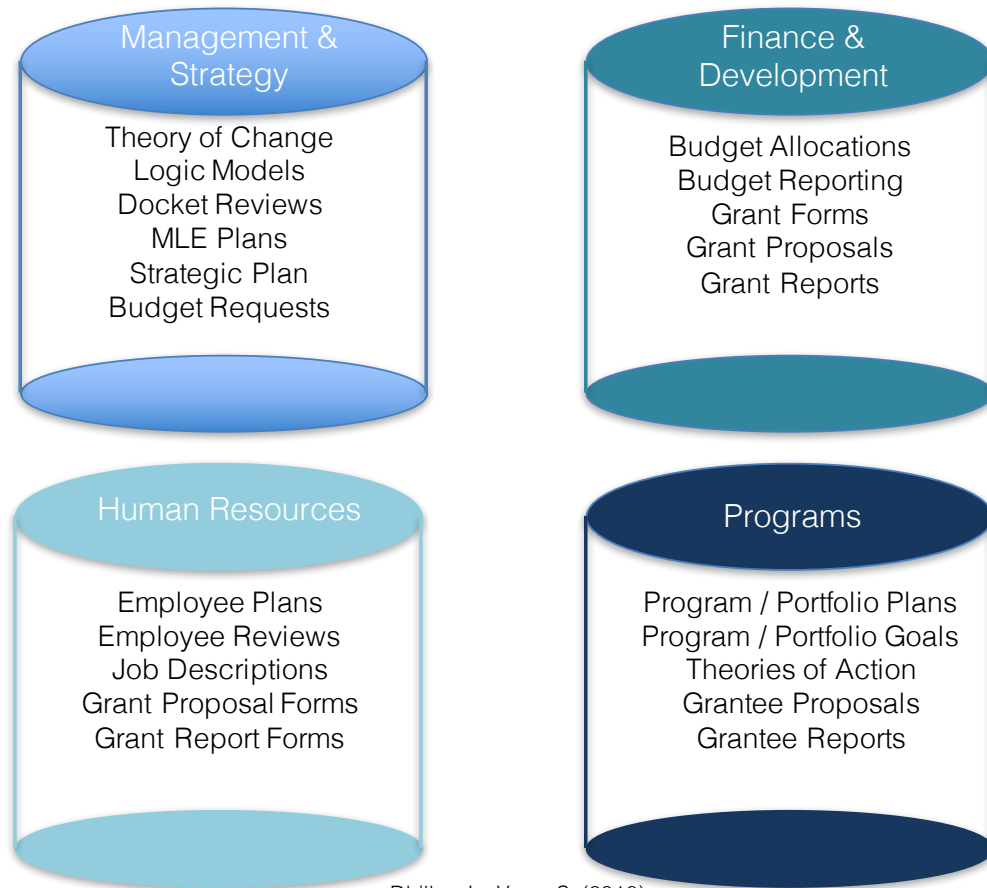
ORGANIZATION TOOL	Purpose	Link to THEORIES OF CHANGE	Estimated Review Period
Strategic Plan	This is the organization's process of defining its strategies to achieve its mission. Elements typically include: mission, values, strategies, objectives, activities.	Strategies should be designed to lead to Theories of Change Outcomes. Strategies may be adjusted when MLE data reflects that need. Activities can be changed annually.	3 to 5 years
Logic Models	See Above	Outcomes should be the same	3 to 5 years
Measurement, Learning and Evaluation Plan	Tracks and assesses the results of the interventions throughout the life of a program or a period of the organization.	Theories of Change Outcomes and strategies should be tested through the MLE Plan.	3 to 5 years
Development Plans\n\nGrant Requests	Organization makes the case for funders to support the organisation mission, strategies, programs and activities.	The requests for funding should align with the Theories of Change, reflecting activities and programs that directly relate to expected Outcomes.	Varies
Grantee Proposals\n\nGrantee Reports	Grantees complete forms that request funding and the reports that they submit to reflect their performance.	Forms should request data that relate to the funder's Theories of Change Outcomes.	Varies

Figure 20(a). Links Between Theories of Change and Other Strategic Tools

Docket Reviews	This is the process that funders utilize to make investment decisions – typically to review funding requests.	Funding decisions should be made with consideration of the contribution to portfolio/ organizational Outcomes.	Varies
Program/ Portfolio Plans Program/ Portfolio Memos	Strategies employed for a funder's portfolio of investments in a program or grant area. Assesses whether a funder is on the right track to achieve the overall objectives.	Resources allocated to the different strategies should be aligned to the Portfolio Theories of Change. That is, how much does each strategy contribute to a specific portfolio outcome?	Annually
Budget Planning Budget Memos Budget Reporting	The articulation of the financial resources needed to support programs/portfolios and the results from those allocations.	Budgets should be aligned to Theory of Change outcomes so that if certain outcomes will be the focus during that year, they would receive greater allocations.	Annually
Team/ Employee Plans Team/ Employee Reviews Job Descriptions	A description of each team's or employee's roles, responsibilities and contribution to organizational outcomes.	Employee roles and reviews should articulate of how each role contributes to the outcomes in the organizational Theory of Change. Job descriptions should align to the skills necessary to achieve those outcomes.	Annually

Figure 20(b). Links Between Theories of Change and Other Strategic Tools

Management & Strategy

Theory of Change
Logic Models
Docket Reviews
MLE Plans
Strategic Plan
Budget Requests

Finance & Development

Budget Allocations
Budget Reporting
Grant Forms
Grant Proposals
Grant Reports

Human Resources

Employee Plans
Employee Reviews
Job Descriptions
Grant Proposal Forms
Grant Report Forms

Programs

Program / Portfolio Plans
Program / Portfolio Goals
Theories of Action
Grantee Proposals
Grantee Reports

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Figure 21. Typical Organizational Tool Development

Many of these tools are vital to organizational strategy and decision-making. However, these tools are often developed and managed separately from one another, at different times and even by different departments of the organization. Typically, the groupings of tools are organized, and often developed, in siloes[xiii] (see Figure 21).

We suggest integrating organizational tools with the Theory of Change. In Figure 22, we depict the Theory of Change as central. It informs the development of each department's strategy and organizational work. Each organizational tool should align with the outcomes articulated in the organizational Theory of Change, creating organizational coherence, cross-team interaction, full staff understanding of their role in the organization, and also permeable boundaries between departments.[xiv]

The alignment of these organizational tools along common outcomes in the organizational Theory of Change increases transparency, efficiency, and effectiveness across an organization.

Conclusion

A strong Theory of Change can improve all aspects of an intervention – its design, implementation, monitoring and evaluation, strategic implications and, ultimately and most importantly, its impact. Now that Theories of Change are firmly rooted as a useful tool in the social change field, we are able to more deeply consider improvements. Our suggestions for increasing their impact include the strengthening of current Theory of Change elements; the addition of new elements; the use of more sophisticated data visualization, creativity and technology; and the alignment with other organizational tools.

Through these and other innovations the field brings forward, Theories of Change become even more useful, meaningful, and impactful.
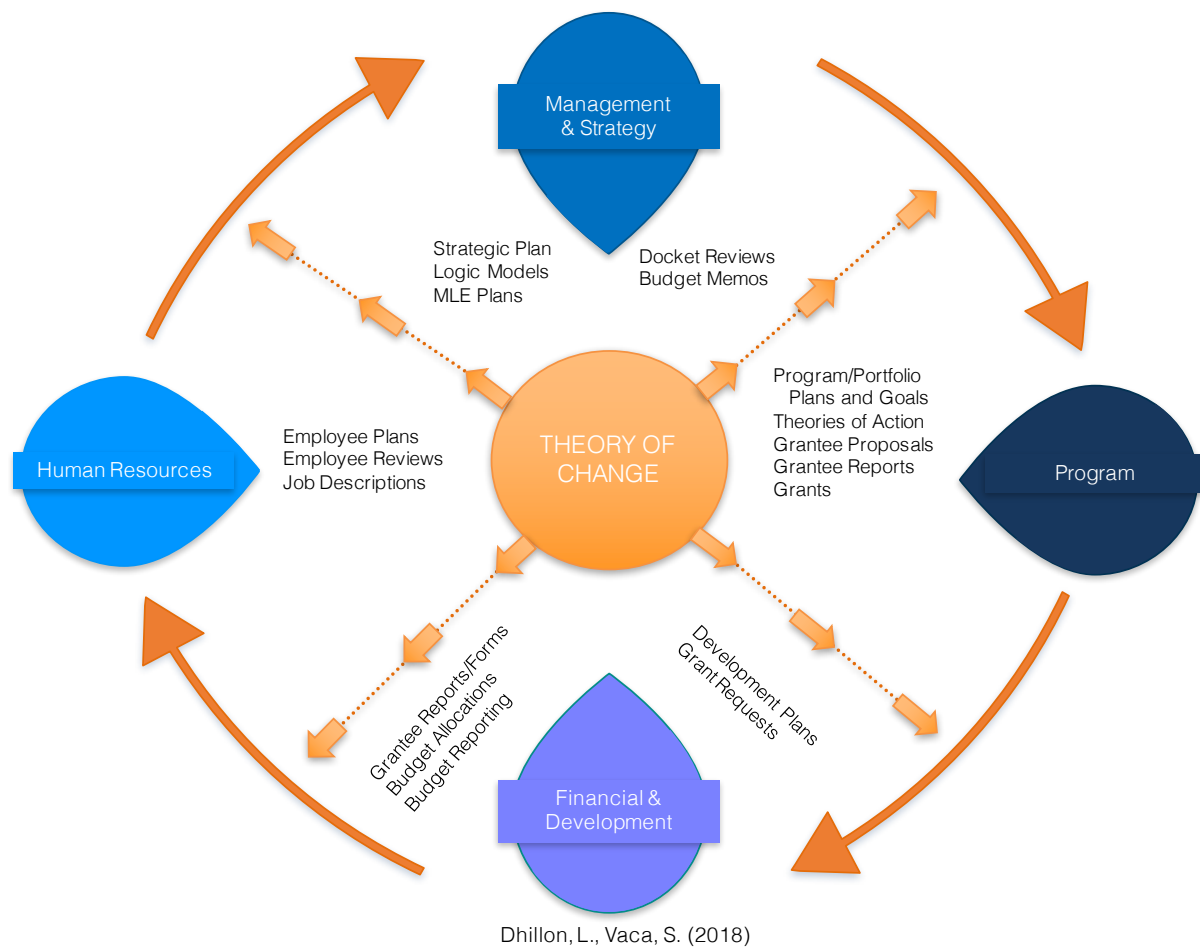
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Figure 22. Organizational Tool System

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[i] While the authors believe narratives should accompany visual Theories of Change, this article addresses the visual representation only. The authors assume readers will have basic familiarity with the history and development of Theories of Change and so only cover it briefly within this article. We encourage readers to explore the topic further, reviewing sources such as http://www.theoryofchange.org/what-is-theory-of-change/Theories of Change-background/Theories of Change-origins/ which provides more historical detail:

> *The stream of work leading to the use of theories of change in evaluation can be traced back to the late 1950s with Kirkpatrick's 'Four Levels of Learning Evaluation Model'. Further progress and evolution has included Daniel Stufflebeam's CIPP (context, input, processes and products) and the widely used logical frameworks (log frames) or logical models which set out causal chains usually consisting of inputs, activities, outputs and outcomes coupled to long-term goals. Methods such as log frames were a significant advance, providing a framework through which the relationships between a program's components could be drawn out and articulated. However, US writers such as Weiss, Chen and Patton increasingly highlighted the challenges in evaluating complex social or community change programs when it was not clear precisely what the programs had set out to do or how and therefore difficult to evaluate whether or how they had achieved it (James, 2011).*

[ii] "Theory of Change is essentially a comprehensive description and illustration of how and why a desired change is expected to happen in a particular context. It is focused in particular on mapping out or "filling in" what has been described as the "missing middle" between what a program or change initiative does (its activities or interventions) and how these lead to desired goals being achieved. It does this by first identifying the desired long-term goals and then works back from these to identify all the conditions (outcomes) that must be in place (and how these related to one another causally) for the goals to occur. These are all mapped out in an Outcomes Framework." (http://www.theoryofchange.org/what-is-theory-of-change/).

[iii] See Section Four for more detail as to the ways in which Theories of Change are distinct from other organizational tools.

[iv] J. Barnes (personal communication, October 2016)

[v] For more information, consider literature on participatory evaluation, see Zukoski, A. and Lulaquisen, M. (2002) and Fetterman, David M., Rodríguez-Campos, L. and Zukoski, A. (2017)

[vi] For purposes of this article, when we are referring to a Theory of Change, we will refer to a Theory of Change designed for an "intervention." An intervention could be by an organization, an organizational team, a program, or a project.

[vii] Ideally, the organization should include broad participation when creating the organizational Theory of Change, including leaders, staff, beneficiaries of the program/intervention, local authorities, partners, and other stakeholders.

[viii] Outputs is the one category that we felt could either be included with our list or eliminated. However, in the end, we chose to include it, especially given that they are often confused with outcomes.

[ix] See a rubric defining "strong" Theories of Change in section 2.4.

[x] For more information see: http://evaluationtoolbox.net.au/index.php?option=com_content&view=article&id=70&Itemid=171

[xi] The authors have not used all of these programs and do not endorse any specifically. Additionally, many of these tools change in format, purpose, and content over time. Visuals in this paper were created with Microsoft PowerPoint and with Adobe Illustrator.

[xii] A narrative can be added to a "creative" Theories of Change to reflect elements that may be more difficult to capture in the creative version.

[xiii] In many instances one department may consult with others (e.g., a program team is often involved in creating Theories of Change or Logic Models) to develop the organizational tool. This diagram represents the general approach to and responsibility for organizational tools.

[xiv] This will be explained in more detail in a subsequent paper.