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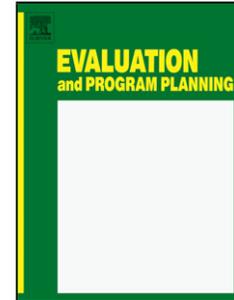
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Assumption-aware tools and agency; an interrogation of the primary artifacts of the program evaluation and design profession in working with complex evaluands and complex contexts

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Highlights

- Like artisans in a professional guild, we evaluators create tools to suit our ever evolving practice.
- The tools we use as evaluators are the primary artifacts of our profession, reflect our practice and embody an amalgamation of paradigms and assumptions.
- Increasingly, the emphasis for evaluations is to unpack the evaluand's "black box" and understand how interventions succeed. Evaluators' role becomes one of facilitating the unearthing of critical program and evaluative assumptions. This is a reflective role that requires tools.
- Assumption-aware tools aid evaluators and stakeholders to better articulate and communicate assumptions at the different points of a program design and evaluation process as well as adapt to the realities of constantly changing, uncertain, complex and nonlinear mechanisms at work around and within a program's theory.

Abstract

Like artisans in a professional guild, we evaluators create tools to suit our ever evolving practice. The tools we use as evaluators are the primary artifacts of our profession, reflect our practice and embody an amalgamation of paradigms and assumptions. With the increasing shifts in evaluation purposes from judging program worth to understanding how programs work, the evaluator's role is changing to that of facilitating stakeholders in a learning process. This involves clarifying purposes and choices, as well as unearthing critical assumptions. In such a role, evaluators become major tool-users and begin to innovate with small refinements or produce completely new tools to fit a specific challenge or context.

We interrogate the form and function of 12 tools used by evaluators when working with complex evaluands and complex contexts. The form is described in terms of traditional qualitative techniques and particular characteristics of the elements, use and presentation of each tool. Then the function of each tool is analyzed with respect to articulating assumptions and affecting the agency of evaluators and stakeholders in complex contexts.

Introduction

Professionals often identify themselves, build associations and create new divisions in the literature by their use and refinement of a specific tool or sets of tools – in much the same as artisans in a medieval guild might ensure quality standards through regulation of permitted materials, styles and working implements. Program design and evaluation professionals, like those in any enterprise or trade, rely on tools to improve the efficiency and effectiveness of our

efforts. Tools are refined or replaced by new technology in an ongoing development of the ability to adapt to dynamic environment and changing requirements of stakeholders. The express purpose of these tools, and perhaps why tools vary from place-to-place or group-to-group, is surely to innovate based on tradition, achieve some professional advantage and increase professional agency i.e. the ability to make judgments and choices as well as exert professional influence taking into account historical experience, current circumstances and changes in environment (Eteläpelto et al. 2013). Like information-age artisans in some modern version of a professional guild, we evaluators and program design professionals create our own tools to suit our ever-evolving practice. By understanding how tools for evaluation and program design are evolving, we gain insight into the history, trends and future development of our profession.

The tools we use as evaluators are the primary artifacts of our profession and represent a synthesis of paradigmatic assumptions and methodological choices expressed as discrete sets of activities for improving the utility of our work and benefit to our stakeholders. As evaluators have endeavored to do a better job of working with complex evaluands and on programs in complex contexts, our tools are changing. Our longtime standby for articulating the theory behind our programs, the logical framework, is looking dated and inadequate. As Patton notes in describing developmental evaluators working with social innovators and changemakers in complex contexts characterized by sometimes chaotic and nonlinear dynamics, “Traditional evaluation approaches are not well suited to such turbulence” (Patton 2010). The rapid proliferation of tools mostly coming out of innovative projects in real world settings may not be as divergent as they appear on the surface. There are clear commonalities of form in that they are iterative, participatory and often graphical. If form follows function, this may also suggest a similarity of purpose. One clear function of these tools is to better articulate and communicate

assumptions at the different points of a program design and evaluation process. Another function is to adapt to the realities of constantly changing, uncertain, complex and nonlinear mechanisms at work around and within a program's theory. This ability to adapt is based on whether the tools, environment and practice allow for sufficient agency by the evaluators and the stakeholders to act on information and learning from the evaluative process.

This paper takes the simple approach of interrogating the form and function of 12 tools used by evaluators when working with complex evaluands and complex contexts. The tools were selected based on a literature review on treatment of assumptions in program evaluation (Nkwake 2013). The form is described in terms of traditional qualitative techniques and particular characteristics of the elements, use and presentation of each tool. Then the function of each tool is then analyzed with respect to articulating assumptions and affecting the agency of evaluators and stakeholders in complex contexts.

2. Background

2.1. The evolution of attention to program assumptions in evaluation approaches

Emphasis on the examination of program assumptions is not entirely new to evaluation practice. Theory-oriented evaluation approaches have for a longtime underlined the need for unpacking the mechanisms by which a program's inputs are transformed into outputs and outcomes (white box), as a departure from method-oriented approaches that focused on measuring outcomes while attributing the observed differences to the input (Stame 2004).

In proposing theory-driven evaluations in 1980, Chen and Rossi (1989) raised the black box and proposed unpacking the black box by providing good social science theory, examining how an

intervention works, discussing evaluators' and stakeholders' views on how outcomes should come about to illuminate the transformation process. Connell et al. (1995) contributed to the black box discussion by noting among other things that the black box is full of many theories- 'theories of change' which take the form of assumptions and sometimes tacit expectations of how change should unfold .

In line with unpacking the black box, Pawson and Tilley(1997) proposed the realist evaluation approach which emphasizes the importance of context and mechanisms that influence program outcomes. They argue that it's not programs themselves that elicit outcomes, rather it is people, embedded in their context who, when exposed to program interventions, activate certain mechanisms, and change by participating in and responding to the program experience in certain ways. The work of elaborating how mechanisms work and how these elicit change definitely involves a lot of unearthing of assumptions.

In unpacking the black box, theory-oriented approaches often get to the elaboration of assumptions. However, there may still not be enough emphasis given to assumptions inherent in the connections within interventions and transformations. Assumptions – the glue that holds all the pieces together – remain abstract and too often inapplicable.

In his developmental evaluation approach, Michael Patton (2010) goes a step further and places attention on the importance of context and the need for evaluators to respond to programs as complex adaptive systems and the dynamic interactions that drive change. This approach supports initiatives that are innovative, often in a state of continuous development and adaptation, and frequently unfold in a changing and unpredictable environment. The purpose then of the evaluator is to provide real-time feedback and generate learnings to inform development. The primary focus is on adaptive learning rather than accountability to an external

authority. The evaluator is embedded in the intervention as a member of the team. The evaluator actually participates in designing and redesigning the intervention helping to inform decision-making and facilitate learning (Dozois, Langlois, and Blanchet-Cohen 2010).

2.2. The changing role of the evaluator

The evolving evaluation approaches and the increasing emphasis on unpacking the black box mirror changes in evaluation purpose. Increasingly, evaluations are done less for judging worth of an intervention, or if an intervention was successful or not. Rather there is more attention to how an intervention worked to achieve its successes and why it could have been more or less successful in certain ways and in certain contexts. There is also interest, within participatory evaluation approaches, in ensuring that evaluation stakeholders utilize the findings of the evaluation for program improvement, which is difficult to achieve if ownership and relevance for the evaluation is not cultivated early enough or through a context sensitive process. There is nothing more alienating for stakeholders than being rushed through the process using a tool that was clearly not developed with any awareness of their specific context or circumstances. The transformational participatory evaluation (TPE), approach takes this a step further and emphasizes that people should control their own lives and should be able to evaluate their own actions (Levin-Rozalis and Rosenstein 2005).

These shifts mean that the traditional role of the evaluator changes; "...particularly in giving up control of the evaluation to the stakeholders and letting the organization become the "owner" of the evaluation process and knowledge, leaving the evaluator the important role of facilitator" (Levin-Rozalis and Rosenstein 2005: 96). According to Patton, the evaluator's primary function is to facilitate stakeholder teams by providing necessary clarifications, evaluative questions, data and logic, and to facilitate data-based assessments and decision-making in the unfolding and

developmental evaluation processes (Patton 2010). This role is of unearthing critical program and evaluative assumptions as well. This is a role in which evaluators need and use a number of tools.

2.3. Working with complexity: the location of assumptions

The literature on complexity consistently emphasizes limitations of evaluators' and stakeholders' ability to comprehend, predict, plan and control the behavior of programs and their environments. For example, outcomes are targeted at multiple systems and system levels, multiple and unclear pathways of change from one system or level to another, dynamic contextual factors, differing stakeholders interests and the inconsistencies in measures and designs that emerge with the inevitable adaptation to context (Connell et al. 1995).

Simplification, with the use of linear models is a common resort and intended to assist designers of programs and evaluations to comprehend the complex reality. This is done by excluding a certain amount of reality from the model, to allow a designer to just focus on a few elements. Chen (this volume) argues that the amount of reality that a model unveils and engages with needs to be feasible. Thus, simplification itself bears the advantage of enabling stakeholders to at least have entry points for comprehending the complex reality. However, this begs the question: "how much of the important information (complex reality) gets to be acknowledged or accounted for by a model and how much of the reality is left unaccounted for?" And this is precisely the location of assumptions – the elements of reality that a model does not take into account.

Patton (2010) argues that ignoring (taking for granted) everything that does not find room in the model – assuming it doesn't exist or it holds as truth no matter or hoping that it will "remain

constant” – is the “*ceteris paribus* hoax”. “Such an assumption makes for nice, neat, bounded, controlled and fundamentally misleading evaluation studies, if the object of study...just happens to be taking place in the real world” (Patton 2010: 197). Simpler models and simple interventions are often favored in program planning, and evaluations based on those plans tend to focus on what the implementer ‘does’ and what resources the donor provides. Program success is the simple equation that describes the transformation of resources by implementer action into expected outcomes. This treatment response model necessarily minimizes the role of context, variability, and volatility, and stakeholder differences.

Assumption-aware tools have been increasingly showing up in the literature to address some of these blind spots. Articulating assumptions is playing an increasingly key role in qualitative approaches to designing or evaluating complex programs or working in complex contexts. To this end, these approaches and tools prescribe probing the unarticulated beliefs of stakeholders in how programs should and do work – and how they could work better. Integrated programs with multiple interventions at multiple scales are becoming the norm as evaluators are required to work with increasingly complex evaluands (Chaterjee this issue). Programs planned with simple models may have the potential for unexpected outcomes and need serious adaptation once implementers have begun working with the actual complexities and dynamics of a given context (Archibald et al. this issue). Perhaps paradoxically, more and more evaluators are coming to the conclusions that the elements that are most critical to stakeholders and program success are also perhaps the least visible and therefore an unarticulated underpinning of a seemingly simple model (Mertens, Nkwake and Morrow, Chen, this issue). Initial learning on how articulating assumptions can improve program outcomes and program success in complex contexts include using assumption-aware approaches and tools in understanding the important impact of:

- Preconditions, trends and context
- Focus on information and feedbacks and how to involve different stakeholders
- Contributing to and enabling stakeholder agency

2.4 Log frame and limitations

The failure of a universal tool to meet the requirements of evaluators, often working in diverse and complex contexts, to describe the causal linkages between program activities and desired outcomes has led to a proliferation of techniques developed largely independently by a variety of organizations and evaluators. A critique of the treatment of assumptions in the Logical Framework Approach (LFA) presents clear divergence in the treatment of assumptions by the twelve theory-based evaluation tools reviewed later in this article that instead elaborate methods for articulation and use of assumptions in strengthening program theory. Approaches that articulate to greater and lesser degrees the assumptions behind how activities relate to observed program-related changes into a sequence of causal relationships are broadly referred to as theory-based approaches (Stame 2004; Chen 2005, Connell, Kubisch, Schorr & Weiss, 1995). The Logical Framework Approach – and the associated tool, Logframe Matrix – is a widely used tool for program planning and focuses on first clarifying objectives for managers and secondly measuring achievement of those objectives for accountability (Coleman 1987, Gasper 2000, European Commission 2011, USAID. 2013). As Fowler (1996) points out, the primary purpose of the LFA is to isolate program design and implementation from any external influences or complicating factors.

‘Assumptions’ feature in the LFA as the third critical focus and the heading for the boxes in the fourth column of the Logframe Matrix. ‘Assumptions’ entered into the matrix are intended to be external to the development hypothesis and out of the control of program managers. The description and monitoring of external ‘assumptions’ in the matrix tool are seen as a way to improve the probability of program success as an early warning to management in the face of uncertainty. Perhaps more pragmatically, assumptions are also seen as a way of apportioning blame in the case of project failure between the program managers responsible for implementing the development hypothesis and their “superiors” for approving the project including those who explicated the assumptions (Rosenberg and Posner 1979). Mushrooming out of the somewhat limited conceptualization of assumptions in the Logframe Matrix, a common thread in many of the new techniques and associated tools reviewed later in this article is extending the usefulness of surfacing, articulating, and testing assumptions for the purpose of strengthening program theories and contributing to program success in new ways..

2.5 The rising awareness of ubiquitous assumptions in program design and evaluation

Critiques of formal planning in the decade following the introduction of LFA and Logframe Matrix began to include elements of systems thinking, proposition of alternative strategies and examination of assumptions as approaches to what were referred to as ‘ill-structured problems’ i.e. program designs with a good deal of uncertainty about relationships and outcomes (Churchman 1971). It is, in fact, many of these elements, strategies and assumptions that were identified as missing in the common planning process that would later be developed into new tools and approaches to work with complex evaluands. What is left out of the program design, what is not articulated in the program documents, these are the assumptions on which much of the program theory rests. Perhaps paradoxically, an increasing number of authors working in

complex contexts with complex evaluands began to recognize that assumptions are the foundation for the program achieving its expected outcomes (Stame 2004; Nkwake 2013; Patton 2010). To date, our program plans, program theories and program design documents are not focusing specifically on what we are now becoming aware might be the most important factors to program success in complex contexts. House, with typical clarity and grace, sums up the importance of underlying assumptions as ‘metaphors’ in the rhetoric that is used and methods that are chosen to provide evidence for any planning process with: “The framing of the social problem depends on the metaphors underlying the stories. How the problems are framed is critical to the solutions that emerge.” (House, 1979: 7).

Mitroff and Emshoff (1979) specifically put forward surfacing and testing assumptions as key to better policy formulation when working on ‘ill-structured’ problems -- identifying a clear mismatch between the tools developed for well-structured programs and the more difficult problems of policy making in the real world. The tools used to understand well-structured programs and policy where the problem is clear and the intervention is seen as independent merely reaffirm the underlying ontological assumptions held by the organization and its leadership. The authors identify this role of unarticulated theories and presuppositions that underlie an organization’s approach to collection and analysis of data and then note “a committed proponent or particular point of view can almost always find and thereby muster significant empirical support for his policy by consciously and unconsciously selecting the evidence most favorable to his case. Selective use of data contained in most organizations can be used to build a strong case for virtually any strategy that might be proposed for any decision the organization might make” (ibid). Therefore, to choose the most effective and appropriate course of action when problems are not clear and an intervention is deeply connected with other actors

and processes, a new set of tools is required. To understand the logic of how an organization might address complex challenges in the real world, it is the underlying assumptions rather than simply the data that must be interrogated. Integrating opposing viewpoints, both plausible and implausible, and systematically assessing the value they present requires a process to surface and then test a program theory's underlying assumptions.

4. Comparison of twelve assumption-aware tools

In the decades following the introduction of LFA, a variety of authors began to innovate in program design and evaluation processes by introducing new tools and approaches that would focus on these assumptions that were left out of mainstream program planning. No single tool came to prominence, but a proliferation of tools focused on specific aspects of the design process or points of time from program development to evaluation. In general, the tools can be grouped into four general uses along the lines of a program theory assumption typology (see Nkwake and Morrow, this volume):

- Diagnostic assumptions
- Prescriptive assumptions
- Causal assumptions
- Integrated or developmental approach to iterative assumption surfacing

4.1 Diagnostic assumptions focused tools can be participatory or more expert focused that are useful when understanding the issues a program might address and questions of program relevance.

An example of a tool focused on the diagnostic assumptions is the Alternative Causes Approach that is used in conjunction with other qualitative tools such as problem trees to ensure probable and improbable causes are considered (Nkwake 2013). This is an iterative process where stakeholders are prompted to think beyond the obvious causes and elicits deeper analysis and can uncover weaknesses in initial arguments for probable cause. A facilitator works in a participatory fashion to examine 1) major causes, 2) minor causes, and 3) improbable causes. This is put on a 3 by 3 matrix with A) Stakeholders beliefs, B) Stakeholders' experience, and C) Evidence from another source. The matrix is the primary prompt for discussion leading to a stronger causal statement(s). This approach can be used during program development, while conducting problem assessment. It is a practical review of all possible causes and engages information from various data sources.

Figure 1: The alternative causes approach process

WHEN:
During program development, while conducting problem assessment; diagnostic
HOW:
1. Explore three dimensions of cause:

- What are the major causes?
- What are the minor causes?
- What are the improbable causes?

2. Create a matrix (Fig. 2) which outlines each type of cause for each information source, including:

- Stakeholders' beliefs
- Experience from similar environments or communities
- Evidence from empirical research and/or assessment

STRENGTHS:

1. Practical review of all possible causes
2. Engagement of various information sources

LIMITATIONS:

1. Can be time-consuming
2. Requires moderator to avoid excessive speculation

Figure 2: Alternative Causes Matrix

	Stakeholders'	What experience	What evidence (perhaps

	(dominant) beliefs on the major cause(s) of the problem	from similar environments or the same community shows to be the major cause(s) of the problem	empirical from applicable research) shows to be the major causes of the problem assessed: This could be from analysis of data generated from assessment or other scientific theory
Obviously Plausible	A (the obviously plausible causes are based mainly on stakeholder beliefs rather than relevant experience or evidence)	B (Causes are ‘obvious’ because of stakeholder experiences)	C (Causes are ‘obvious’ because they are based on empirical evidence)
Minimally Plausible	D (the minimally plausible causes are based mainly on stakeholder beliefs rather than relevant experience or evidence)	E (the minimally plausible causes based on stakeholder experiences)	F (Causes are minimally plausible because they are based on empirical evidence)

<p>Unthinkable (factors are thought to have no connection with the problem in this particular situation)</p>	<p>G (the unthinkable causes, based mainly on stakeholder beliefs rather than relevant experience or evidence)</p>	<p>H (the unthinkable causes based on stakeholder experiences)</p>	<p>I (causes are unthinkable because they are based on empirical evidence)</p>
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Adapted from (Nkwake 2013).

4.2 Prescriptive assumptions focused tools emphasize strategy and are useful for choosing between different implementation approaches and for questions of efficiency and effectiveness.

Alternative Strategies Approach intends to surface prescriptive assumptions to examine multiple courses of action to evaluate options and proceed with the most appropriate choice. This may be done during program planning to identify and recommend potential courses of action. An objective tree is built around the main issue to be addressed and different potential courses of action are drawn together from alternative sets of action. Each strategy is then plotted on a matrix and compared based on predetermined criteria: effectiveness, contextual relevance, feasibility, sustainability, comparative advantage and other stakeholder-derived criteria. This approach focuses on program quality and is useful for involving multiple stakeholders into the project planning and has clear link to participation in implementation. There is a risk that all

identified factors could not be addressed and has a potential to lead to identification of strategies that are unrealistic or outside of the capacity of the program. Once factors are identified and a strategy is selected, these can be stated as prescriptive assumptions of the program theory.

Figure 3: Alternative causes approach

WHEN:

When planning a program, in order to identify and recommend potential courses of action; prescriptive

HOW:

1. Identify the main issue.
2. Create an objective tree using assumptions regarding relationships of cause and effect.
3. Arrange objectives into cluster flow chart to fully view relationship of all factors.
(Fig. 4)
4. Utilize this chart to decide which options to pursue in programming.

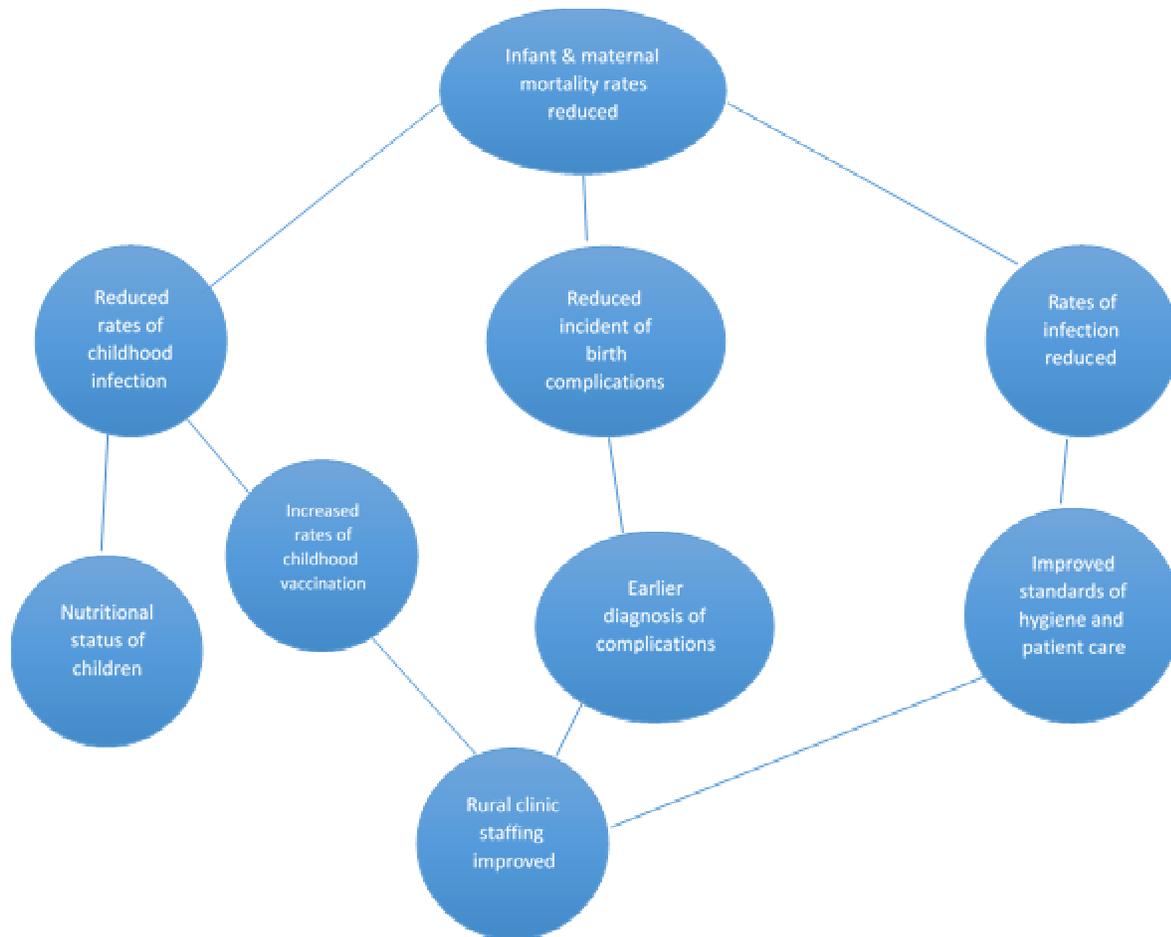
STRENGTHS:

1. Requires multi-stakeholder engagement
2. Helps ensure program quality through thorough exploration of possibilities

LIMITATIONS:

1. Can be time-consuming
2. May not be able to implement measures to address all identified factors

Figure 4: Objective Tree



Adap

ted from European Commission (2011)

Strategic assessment is another approach for working with prescriptive assumptions and is a method that draws on empowerment-oriented stakeholder dialogues to examine assumptions. Stakeholders focus less on criticizing policy/program or debunking policy/program assumptions, but rather, stakeholders use argumentation tools to examine assumptions (Leeuw 2003). The

method helps to differentiate between assumptions that are most critical to program success and most likely to take place; those that are critical but least likely; those that are not critical but very likely; and assumptions that are neither critical to program success nor likely to take place.

Figure 5: Strategic assessment approach

WHEN:

During program development or when diagnosing policy/program issues; prescriptive

HOW:

1. Gather a wide cross-section of individuals involved in the given issue, divided into groups to ensure that various perspectives are represented in each group.
 2. Have each group identify:
 - key individuals or groups who need to be involved
 - assumptions regarding what caused the given issue
 - Analyze the importance of each assumption and whether or not it is justified
- Groups discuss such questions as:
- How important is the assumption to the success or failure of the program/policy?
 - How certain are we that the assumption will take place?
3. Bring groups together to present strategy and encourage questioning and debate over which method would be best.
 4. Synthesize the various ideas, noting assumptions crucial to the final argument as well as further research potentially needed to resolve points of disagreement.

STRENGTHS:

1. Multiple viewpoints considered
2. Debate fosters consensus and strongest arguments to prevail

LIMITATIONS:

1. Breadth of participation may be difficult to achieve
2. Requires moderator or other mechanism to focus productive debate, particularly when considering differing power dynamics among participants
3. May be time-consuming

Yet another tool for working with prescriptive assumptions, Strategic Assumption Surfacing and Testing (SAST), according to Mitroff and Emshoff (1979) is a process that begins at the point where stakeholders have a vaguely formulated notion of a problem it faces and has developed one or more initial or rough ideas about solving it. In the first step (assumption surfacing/specification) stakeholders work backwards from an already existing or tentative proposed strategy; collate data or evidence that supports that strategy; and “identify” the underlying assumptions which (when coupled to the data) allow one to deduce the strategy as a consequence. “If we view the assumptions as the set of major premises of an argument, the data as the minor premises, then the strategy may be viewed as the deductive or resultant consequence of a syllogistic argument” (Mitroff and Emshoff , 1979: 3). Here, assumptions are described as

given conditions, events, or attributes that are or must be taken as true and which implicitly underlie the strategy.

Figure 6: Strategic assumptions surfacing and testing

WHEN:

During the problem diagnostic and program approach/design phase

HOW:

1. Once a problem and initial treatment strategy have been identified, note the data to support the strategy and the underlying assumptions made in developing that strategy.
2. Review the list of assumptions and reverse the arguments for each, creating counter-assumptions.
3. Search for supporting data to bolster the counter assumptions and, where validated, create counter strategies.
4. With this full list of strategy options, negotiate a set of acceptable assumptions that will serve as a base moving forward.
5. Create a “best” strategy from these assumptions that is supported by relevant data.

STRENGTHS:

1. A systematic evaluation and comparison of assumptions; exploration of how and which assumptions lead to various strategies
2. Reveals cohesive elements of seemingly opposite arguments

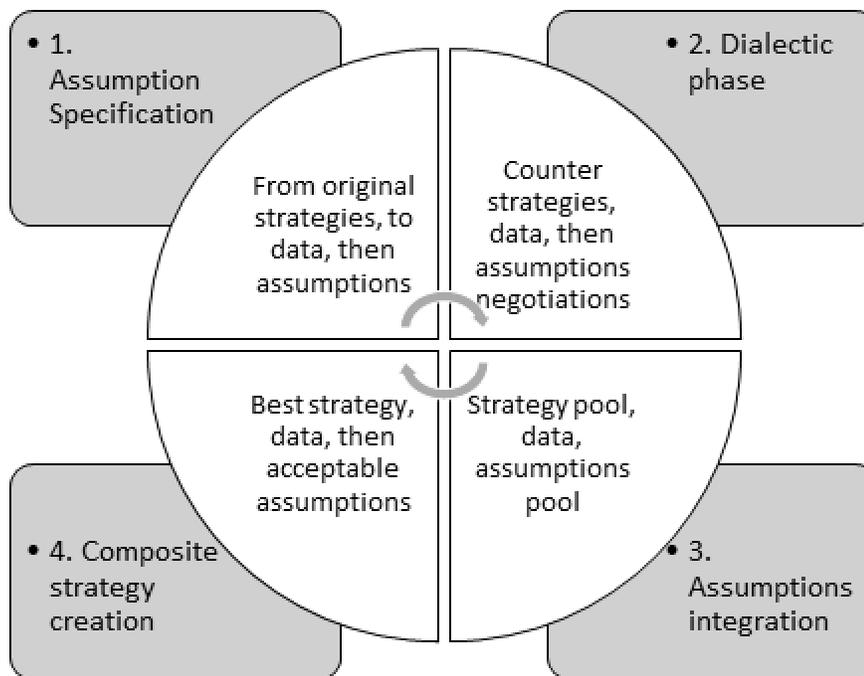
3. Allows for system-level analysis of an issue

LIMITATIONS:

1. Can be time consuming

2. Level of debate can lead to roadblocks or easy concession if participants are uncomfortable

Figure xxx, *The Strategic Assumption Surfacing and Testing process*



Adapted from (Mitroff and Emshoff, 1979)

4.3 Causal assumptions focused tools

Causal assumptions focused tools assist stakeholders to unearth assumptions related to the causal sequence of program results. What will it take a program's immediate outputs to yield desired outcomes? What will it take those outcomes to yield impacts? These questions are the foci of causal assumptions focused tools. Perhaps the most active area of tool development over the years has been exactly this search for a better articulation and understanding of causal assumptions underlying the program theory.

A well-known tool for explicating causal relationships is the Causal Loop Diagrams/Feedback Loops. In this approach, a diagram depicts the relationship between factors influencing a question or issue and gives space for the documentation of factors that reinforce – either positively or negatively – a given component. The visualization of these loops encourages a systems-level, multifaceted viewpoint rather than a linear relationship approach. This approach can be used as a diagnostic tool to improve an on-going program or with stakeholder in (re)constructing a program theory for design or evaluation. The stakeholders choose one or two variables and then suggest every factor that might affect them. Then peripheral factors that may influence the causal factors are suggested. Factors are arranged to show how they influence each other and then positive/negative relationships are noted graphically. This process leads to a better understanding of how program components affect each other. It also considers multiple factors outside of those over which the program has direct influence. This higher level of complexity may be a hindrance to broad participation or program theory simplification, but is intended to provide more context specific information on program function.

Another approach where stakeholders can work together to articulate causal assumptions could be the Elicitation Methodology (Leeuw 2003)- an approach where program developers and other

stakeholders create “cognitive maps” through observation, discussion, and demonstration to understand the potential impacts of a program or policy.

WHEN:

During program development, as a means of understanding what outcomes can be expected; transformational

HOW:

1. Review the strategic intentions of the program, including a study of documentation designed to direct behavior.
2. Gain understanding of how stakeholders make program decisions through observation and dialogue, both individual and group-based.
3. Analyze data to develop conclusions based on stakeholder assumptions.

STRENGTHS:

1. Understanding of stakeholder decision making, particularly during real-time events
2. Can be used during program implementation to remind leaders why programming may or may not be working

LIMITATIONS:

1. Lack of direction on how to proceed once assumptions have been discovered
2. Not all assumptions may be valid

L

Participatory Impact Pathways Analysis (PIPA) (Douthwaite et al. 2007) is a participatory approach to planning, monitoring and evaluation, the PIPA engages stakeholders, including project staff and beneficiaries, in thorough examination of options for program theory and activities.

WHEN:

Prior to program development, including monitoring and evaluation components

HOW:

1. Develop a problem tree to link problems being addressed with social, environmental and economic conditions that it intends to target.
2. Convert problem tree into outcome tree, representing the scenario after problems have been addressed.
3. Convert outcome tree to outcome logic model, describing changes in knowledge, attitudes, skills and practices.
4. Devise and articulate strategies to bring about these changes.
5. Develop a monitoring and evaluation plan and schedule of activities.
6. Execute the plan.

STRENGTHS:

1. Encourages stakeholders to think through how project activity outcomes can

contribute to changes

2. Participatory process

3. Use of network maps to visualize and link outcomes, inputs and impacts, as well as how stakeholders are linked and influence one another

LIMITATIONS:

1. Can be time consuming

2. Requires participation from all levels of stakeholders, which can create some difficulties if disagreements occur

Policy Scientific Approach (PSA) is an approach where analysis and reformulation of principle evaluation questions is undertaken using current social, behavioral and economic theory in order to uncover and account for assumptions. It is appropriate within a problem diagnostic process for a program already in place. The method uses primary and secondary data to answer three key questions: a) why the program was created, b) what problem it is trying to address and c) what goals the program is trying to achieve (Leeuw 2003).

WHEN:

During a problem diagnostic process for a program already in place

HOW:

1. Use primary and secondary data to answer:

- Why was the program created?
- What problem is it trying to address?
- What goals is the program trying to achieve?

2. Identify statements related to the problem and list them alongside the related intervention mechanisms and program/policy goals.

3. Reformulate these statements in “if/then” format.

- Ex: If x, then y.

4. Finish “if/then” statements by adding “because.”

- Ex: If x, then y because...

5. Create chart showing the links between each statement, or logic flow (Fig. 1).

6. Evaluate the validity of the results, looking for:

- logical consistency
- empirical content (in line with current theory)
- extent of program theory focus on variables that can be “manipulated” or “steered” through policy programs

STRENGTHS:

1. Use of multiple methods
2. Use of argumentation analysis to validate reconstruction process
3. Diagrams help foster dialogue with stakeholders
4. Review of current science theories can reinforce program integrity

LIMITATIONS:

1. Can be difficult to involve those who developed the program theory when discovering or revealing flaws
2. Methodology can be time consuming and cumbersome
3. Lack of attention paid to differences in power positions of the stakeholders

Finally, we could not finish this section without a reference to the Program Theory Matrix (Funnel 2000). Program success factors, criteria and outcomes are questioned at each step in a sequenced program hierarchy of intended outcomes; starting with program outputs, followed by intermediate outcomes, ending with an ultimate goal.

Program Theory Matrix (Funnel 2000)

WHEN:

When conducting performance measurement

HOW:

1. Identify the ultimate outcome desired.
2. List intermediate outcomes that work together to feed that ultimate outcome.
3. List immediate outcomes.
4. Compile these into a hierarchical diagram so that the flow from immediate, intermediate, and ultimate outcomes is visible, using arrows to indicate direction and relationship.

STRENGTHS:

1. Allows for examination of relationships between inputs, processes, outputs, and outcomes at all levels

2. Accounts for supplemental factors that lead from lower-level outcomes to

higher-level ones

LIMITATIONS:

1. Requires substantial documentation to achieve a program theory matrix for all levels of a project, which is time consuming

4.4 Integrated and developmental approaches to iterative assumption surfacing

An integrated approach that focuses on transformative assumptions are typically used in complex programs and complex or developmental contexts often where social justice or rights based approaches are central concerns for the program design. In fact, the bulk of the process and the core of the analysis in these approaches focus on articulating and then working with causal assumptions, especially during the program design phases.

4.4.1 W.K. Kellogg Foundation (WKKF) approach (WKKF, 2004)

Within this approach, assumptions-diagnostic, prescriptive, causal or external, emerge as elaborations of how and why the identified change strategies will work in the particular context. These justifications are provided after justifying the selection of a specific strategy from among the alternatives that have researched, stakeholders have to state why the given strategy is needed and why it is expected to work in achieving program goals within the intervention's context.

4.4.2 The Aspen Institute Roundtable on Comprehensive Community Initiatives (RTCCI) approach

Within this approach, assumptions emerge mostly in the program design stage as factors that are thought to be preconditions necessary to achieve the results along the pathway of change and why the set of preconditions is sufficient or necessary to bring about the long-term outcome (Anderson 2004) .

4.4.3 Mayne's Contribution Analysis (Mayne 2011)

In both program design and evaluation, assumptions emerge as stakeholders' beliefs as well as ideologies related to explicit intents for solving a defined problem. These are mostly causal or

“behind the scene” assumptions and they are considered a crucial part of a program’s theory (Mayne 2011).

5. Discussion: Assumption-aware tools share similar forms and functions

Tools for improving program theory by surfacing and working with assumptions were developed to fill in what a growing number of professionals were beginning to be aware was missing in other mainstream program planning activities. These were the aspects that were left out of program planning that seemed most essential to the program success in complex contexts or for complex evaluands.

Perhaps most striking of the characteristics of the assumption-aware tools identified in the literature review is the near universal focus on articulating how the program was assumed to relate or function in context. These take the form of mapping links of program elements to other stakeholders, institutions, resources and processes. The elements of systems thinking in many of the tools explicitly focus on articulating what the feedback from the environment and stakeholders to program actions are or may be in the future. Preconditions for success or failure are a particular focus of the most recent assumption-aware tools and squarely places the emphasis on understanding program theory clearly rooted in a specific context.

Assumption-aware tools	context	Alternative	iterative	participatory	graphical
Alternative Causes Approach	X	X	X	X	

Alternative Strategies Approach	X	X	X	X	
Causal Loop Diagrams/Feedback Loops	X	X		X	X
Elicitation Methodology	X	X	X	X	X
Integrative Approach (Kellog, Aspen, Mayne)	X	X	X	X	
Participatory Impact Pathways Analysis (PIPA)	X	X		X	X
Policy Scientific Approach	X	X	X	X	X
Program Theory Matrix				X	
Strategic Assumption Surfacing and Testing	X	X	X	X	
Strategy Assessment Approach	X	X	X	X	

The primary way that assumption-aware tools function is through comparing and selecting between alternatives. This often involves a process of eliciting and then interrogating the unspoken assumptions from a broad set of stakeholders. Some of the tools look for external and

objective forms of evidence to support or discard these assumptions once articulated. Other tools apply a systematic process of prioritization to arrive at consensus of which assumptions are most likely to ensure a sound program theory and potential program success in a specific context.

Iterative surfacing of assumptions and iterative learning based on reexamination of initial assumptions also feature prominently in the identified tools. Assumptions are reexamined in light of other stakeholder assumptions or evidence that are presented during the process of program theory development. Iteration is at the heart of prioritization and selection of preferred alternatives. For the most recently introduced approaches for working with the most complex evaluands, developmental and integrated approaches are based in high frequency reflection and iterative reexamination of the initial assumptions and preconditions that underlie the program theory.

Participatory and qualitative approaches are common in these tools because stakeholders must be engaged in the process to identify the similarities or potential divergent assumptions behind how the program is intended to work and what program success might look like. In fact, dialogue was the earliest, and continues to be the preferred, method in the assumption-aware tools for surfacing and then evaluating the relevance and coherence of stakeholder assumptions behind a program theory. Consensus building and learning-focused processes intrinsic to participatory approaches appear to be essential to the continued refinement of the program theory through stakeholder reflection on assumed interaction of the program in a specific context. This is further reinforced in the developmental and iterative approaches that often place the evaluator in the role of facilitator, monitor, or coach (Patton 2010).

About half of the identified assumption-aware tools are also graphical which implies that they are focused on communication of the assumed relationship between program components,

among stakeholders or between the program and its historical or spatial context. Visual facilitation offers the opportunity to reflect in real-time on evolving understanding of how interrelated aspects of the program work together and with their environment. It also allows for articulation of relationships that might not be linear and easily captured in a matrix or even standard written descriptions of a program theory. Once again, these assumption-aware tools seem to be particularly well-suited for complex evaluands that may include large numbers of interacting parts and interventions as well as non-linear dynamics, feedbacks and other complex relationships. Graphical representation is particularly well-suited to describing complex interactions of multiple elements and is probably the reason why it features in so many of the assumption-aware tools.

In this volume, a number of authors have pointed to pragmatism and the focus on clarity of concepts as a precursor to promoting action as fundamental to understanding why assumption awareness is such an important aspect of quality program theory development. The form of the tools follow in this logic and the majority of their characteristics are useful for bringing clarity to the assumed interactions, program function and success for diverse groups of stakeholders and in uncertain or complex contexts. In the end, the form of these tools do point to their ultimate intended function; these assumption-aware tools are intended to remove the potential blockages and missteps inherent in complex programs with unarticulated assumptions so that action can be taken with the confidence and clear vision of program success that can be shared among the stakeholders. The tools increase the effectiveness and agency of the evaluator but also ultimately result in increased agency for the program stakeholders.

6. Conclusion: assumption-aware tools increase agency and are a bridge to more assumption-aware professional standards, principles, and practice.

Effective tools, to the extent that they facilitate complexity-aware evaluation, can play a key role in empowering evaluators and stakeholders alike to be agents of social change. The term “Agency” is frequently used within empowerment as “the expansion of freedom of choice and action to shape one’s life” (Narayan 2005:10). According to Sen (2001), a person’s agency is one’s ability to act on behalf of what he or she values and has reason to value. Agency is defined with respect to the goals at hand, as well as the freedoms and capabilities to pursue those goals (Alkire 2006).

In what Meyer and Jepperson (2000: 117) refer to as agency for themselves, evaluators can use assumption-aware tools to become more aware of their own assumptions as well as recognize the power of the unconscious mind. Literature on social cognition highlights both the power and limitations of the conscious mind (Wegner 2002). Even when evaluators, like all humans, may consciously desire not to be biased, they can very easily be trapped in their own biases. Their unconscious biases and implicit stereotypes too often underlie methodological approaches and program theory related assumptions. What is required is vigilance; a continual awareness of the need to explicate assumptions and the function that assumption-aware tools can play in improved designs, evaluation and ultimately program success is a prerequisite for complicated evaluands or designs of complex programs. Similarly, in what Meyer and Jepperson (2000: 117) refer to as agency for others, evaluators can make use of assumption-aware tools to facilitate program stakeholders in examining their assumptions about evaluands and evaluations.

In the next chapter, we conclude that the utility and application of assumption-aware tools needs to be supported by enabling institutional and policy environments (Narayan 2005), i.e. agency

for standards and principles. Such “opportunity structures” can be established but requires institutions such as evaluation associations, evaluation commissioners and consumers (such as governments and private organizations) to put in place policies that encourage the examination of assumptions to become a norm, within program design, implementation and evaluation. For example, USAID’s evaluation policy (2013) places clear emphasis on articulation of assumptions in program designs: “Compared to evaluations of projects with weak or vague causal maps and articulation of aims, we can expect to learn much more from evaluations of projects that are designed from the outset with clear development hypotheses, realistic expectations of the value and scale of results, and clear understanding of implementation risks.”

Gespar (2000) characterizes some of the major criticism of the LFA focus exactly on this restriction of agency with the clever terms of ‘Lackframes’ alluding to the major program considerations that are left out of the Logframework Matrix and the ‘Lockframe’ where program innovation and adaptation are impeded by adherence to predetermined objectives. By looking at a wider array of evaluators’ approaches and tools, it becomes obvious that one of the principle ways that professionals and the tools they develop address perceived inadequacies is by focusing on what is one level below the simple hierarchy of objectives, i.e. surfacing assumptions with a broader range of stakeholders and objectively evaluating which ones are more helpful in strengthening the program theory. The most recent tools, capacity building efforts and expertise in working with complexity is very much focused on developing on the capability to investigate a wider range of assumptions affecting the program and usually employing a mix of methods. Perhaps most encouraging, assumption-aware tools have been developed for every step of the program design, implementation, monitoring and evaluation phases. Refinement and increased

use of assumption-aware tools is promising for addressing issues of program appropriateness and success in the increasingly complex contexts where programs are designed and evaluated.

A simple comparison of the form, function, strengths and weaknesses of an emergent group of assumption-aware program evaluation and design tools that have been developed to address a number of inadequacies of traditional evaluation methods when faced with complexity is perhaps just a first step towards a more serious research agenda on the practical aspects of working with assumptions. Head-to-head comparison of different tools and approaches and the consistent application of metrics, yet to be developed, such as time requirements, skills and usable outcomes may lead to improved normative guidance on when and how to use different tools in the design process. Organizing tools by an agreed typology of assumptions is a promising start to some form of quality assurance in choosing and applying different approaches. There appears to be an increasing recognition of the role that assumptions play in our profession, and now is the time to gather evidence about what approaches are working with complex evaluands and in complex contexts to deepen this discussion and further evolve our profession to meet these contemporary challenges.

References

Alkire, S. 2006. "Measuring Agency: Issues and Possibilities." *Indian Journal of Human Development* 1 (1).

- Anderson, A. 2004. Theory of Change as a tool for strategic planning: a report on early experiences. Washington D.C: Aspen Institute.
- Chen, H., and P. Rossi. 1989. "Issues in the Theory-driven Perspective." *Evaluation and Program Planning* 12 (4):299-306.
- Chen, H. T. 2005. *Practical program evaluation: assessing and improving planning, implementation, and effectiveness*, Newbury Park, California, London and New Delhi: Sage publications.
- Churchman, C.W. 1971. "The Design of Inquiring Systems Basic Concepts of Systems and Organization."
- Coleman, G. 1987. "Logical framework approach to the monitoring and evaluation of agricultural and rural development projects." *Project Appraisal* 2 (4):251-259.
- Connell, J., A.C. Kubisch, L.B. Schorr, and C.H. Weiss. 1995. *New Approaches to Evaluating Community Initiatives: Concepts, Methods, and Contexts*. . Washington, DC: Aspen Institute.
- Douthwaite, B. , S. Alvarez, S. Cook, R. Davies, P. George, J. Howell, R. Mackay, and J. Rubiano. 2007. "Participatory Impact Pathways Analysis: A Practical Application of Program Theory in Research-for-Development." *Canadian Journal of Evaluation* 22 (2):127-159.

- Dozois, E., M. Langlois, and N. Blanchet-Cohen. 2010. *A Practitioner's Guide to Developmental Evaluation*. Montreal: The J.W. McConnell Family Foundation and the International Institute for Child Rights and Development.
- Eteläpelto, A., K. Vähäsantanen, P. Hökkä, and S. Paloniemi. 2013. "What is agency? Conceptualizing professional agency at work." *Educational Research Review* 10:45-65.
- European Commission. 2011. *Aid Delivery Guidelines Vol1*. In *Project Cycle Management Guidelines*. Brussels.
- Fowler, A. 1996. "Demonstrating NGO performance: Problems and possibilities. ." *Development in practice* 6 (1):58-65.
- Funnel, S.C. 2000. "Developing and Using a Program Theory Matrix for Program Evaluation and Performance Monitoring." *New Directions for Evaluation* (87):91-101.
- Gaspar, D. 2000. "Evaluating the 'Logical Framework Approach'-towards Learning-Oriented Development Evaluation." *Public Administration and Development* 20 (1):17-28.
- House, E.R. 1979. "Coherence and credibility: The aesthetics of evaluation." *Educational Evaluation and Policy Analysis* 1 (5):5-17.
- Leeuw, F.L. 2003. "Reconstructing Program Theories: Methods Available and Problems to be Solved." *American Journal of Evaluation* 24 (1):5-20.

Levin-Rozalis, M., and B. Rosenstein. 2005. "The changing role of the evaluator In the process of organizational Learning." *The Canadian Journal of Program Evaluation* 20 (1):81-104.

Mayne, J. (2011) Contribution Analysis: Addressing cause effect, in Forss, K., Marra, M. & Schwartz, R. (2011). *Evaluating the Complex: Attribution, Contribution, and Beyond*, New Brunswick, New Jersey: Transactional Publishers, pp 53-96

Meyer, J.W., and R.L. Jepperson. 2000. "The 'actors' of modern society: The cultural construction of social agency." *Sociological Theory* 18 (1):100-120.

Mitroff, I.I., and J.R. Emshoff. 1979. "On Strategic Assumption-Making: A Dialectical

Approach to Policy and Planning." *Academy of Management Review* 4 (1):1-12.

Narayan, D., ed. 2005. *Measuring Economic Empowerment: Cross-Disciplinary perspectives*. . Washington DC: World Bank.

Patton, M. 2010. *Developmental evaluation: Applying complexity concepts to enhance innovation and use*. New York: Guilford Press.

Pawson, R., and N. Tilley. 1997. *Realistic Evaluation*. London Sage.

Rosenberg, L., and D.P. Lawrence. 1979. *The Logical Framework: A Manager's Guide to a Scientific Approach to Design and Evaluation*. Washington, DC: Practical Concepts Incorporated.

Stame, N. 2004. "Theory-based Evaluation and Types of Complexity." *Evaluation* 10 (1):58-76.

USAID. 2013. "ADS Automated Directives System. Chapters 201-203. ." Accessed Feb 10th, 2016.

Wegner, D. M. 2002. *The illusion of conscious will*. Cambridge, MA: MIT Press