

Complex Behavior in Program Design and Evaluation: Toward Furthering a Dialogue Between Program Designers and Evaluators



*"PROMOTING AND EVALUATING THE WELFARE OF THE
COMMUNITY: EMERGENCY, RESILIENCE, COMPLEXITY"
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Easy for evaluators to know what to do. Not easy to get funders to let us do it.

Unpredictable outcomes

Realistic timeframes

Equitable distribution of benefits

Unpredictable outcome chains

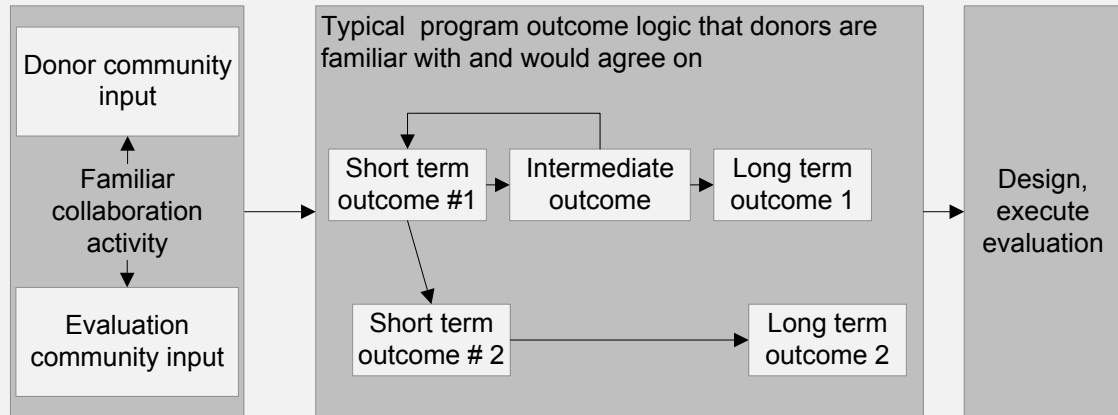
Discontinuous change

Feedback loops among outcomes

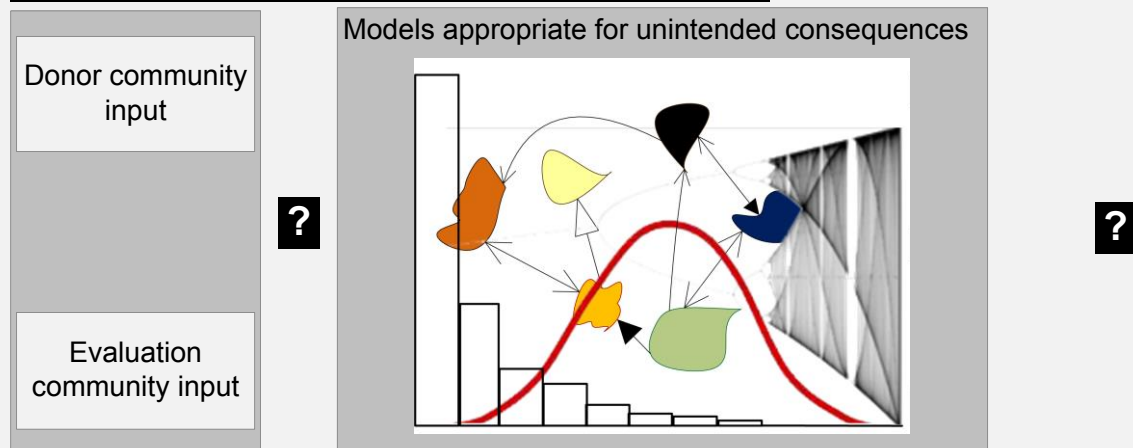
Consequence of small changes

Evaluation methodology

We know how to have this kind of conversation

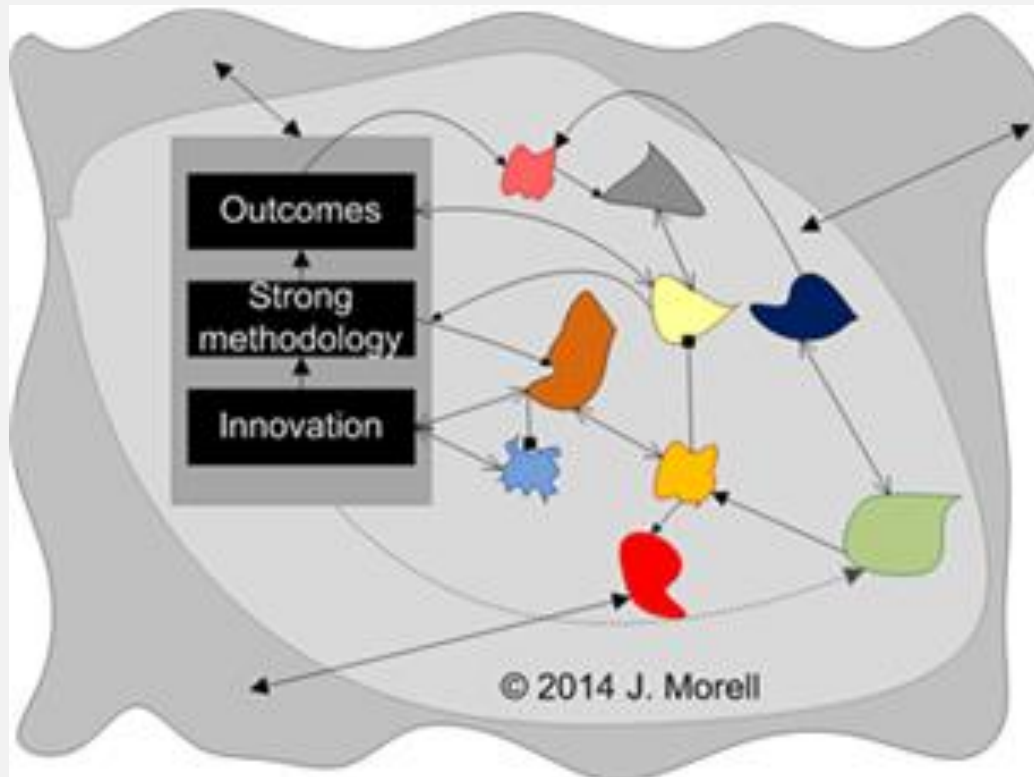


We do not know how to have this kind of conversation



We live in a world where:

- Programs are embedded in rich settings.
- Feedback and network effects can result in sudden change.
- Multiple small changes can align to imperceptibly change a program's trajectory



Single outcome or highly correlated outcomes can get us into trouble.

	Program Focus			
	Education	Teacher Training	Public Health	AIDS
\$				
Skills				
Career choices				
Planning time and effort				
Organizational structures				
Informal relationships				
Connections to other policies				
Behavior of service recipients				

Single outcome or highly correlated outcomes can get us into trouble.

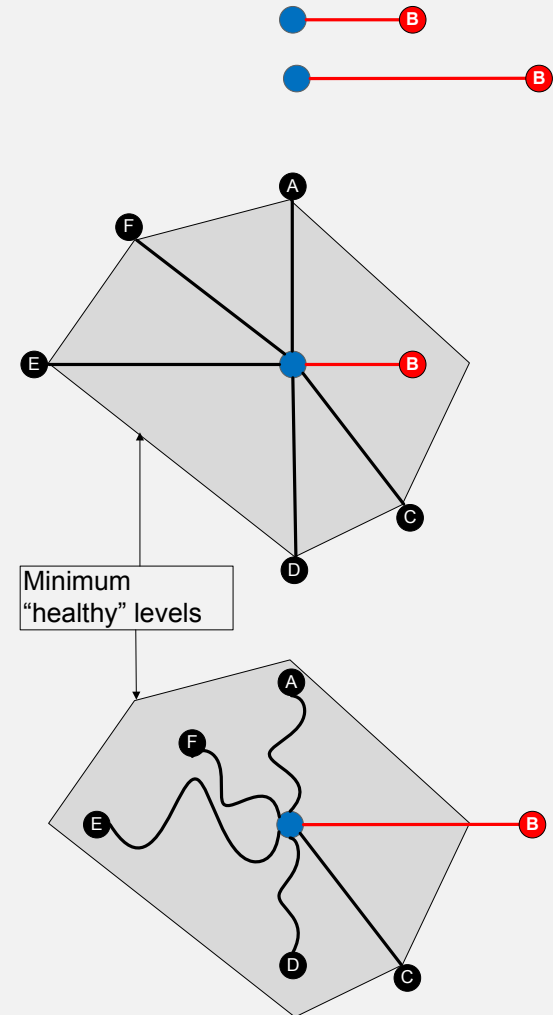
Missions, funding streams, and programs are committed to maximizing a single performance objective (or at least several that are highly correlated).

For long term viability, the “it” we want to help needs to meet multiple performance objectives.

Unidirectional programs distort ability to meet other objectives.

“Its” will adapt, often in unexpected and undesirable ways.

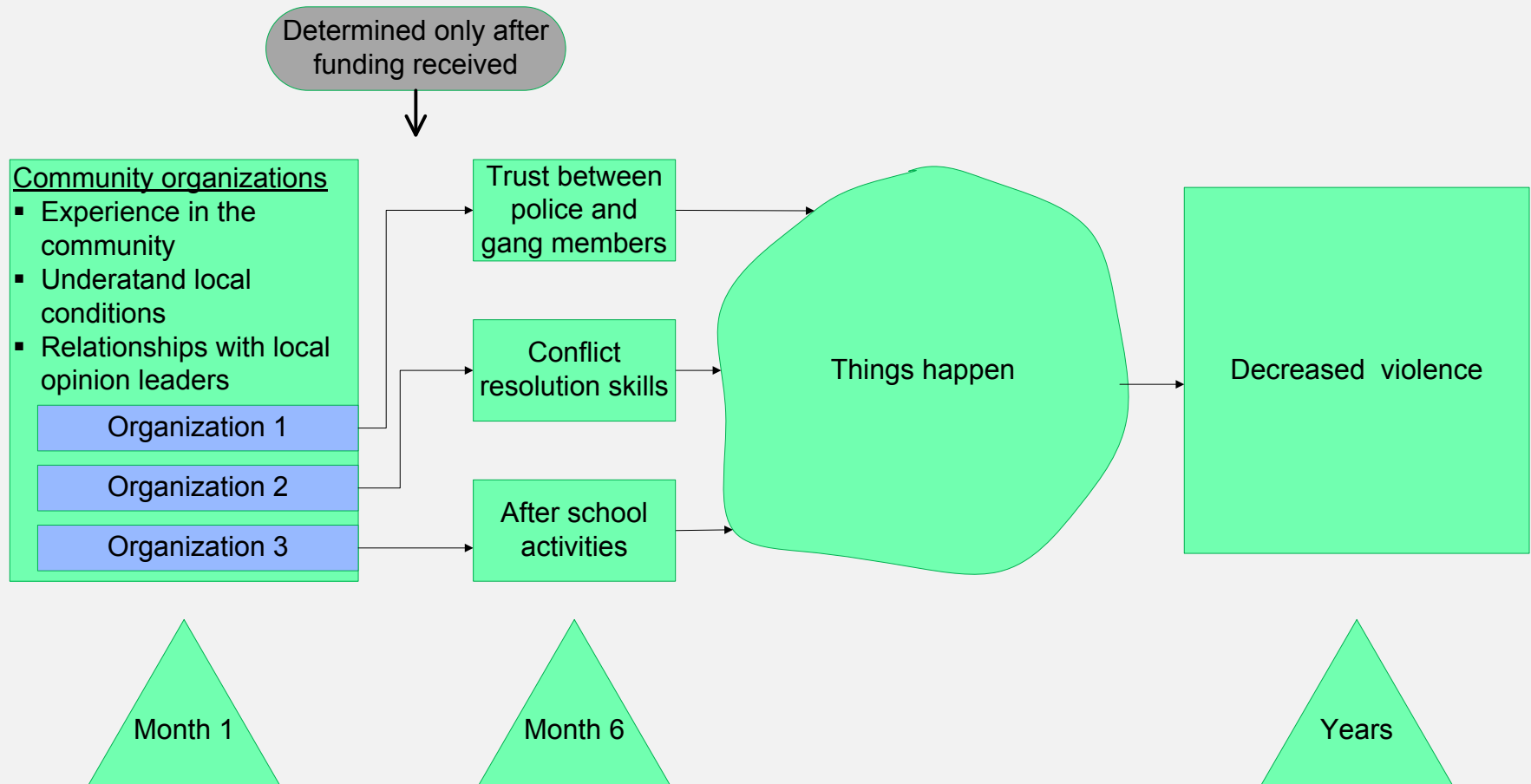
Evaluators need to help funders think in terms of uncorrelated outcomes.



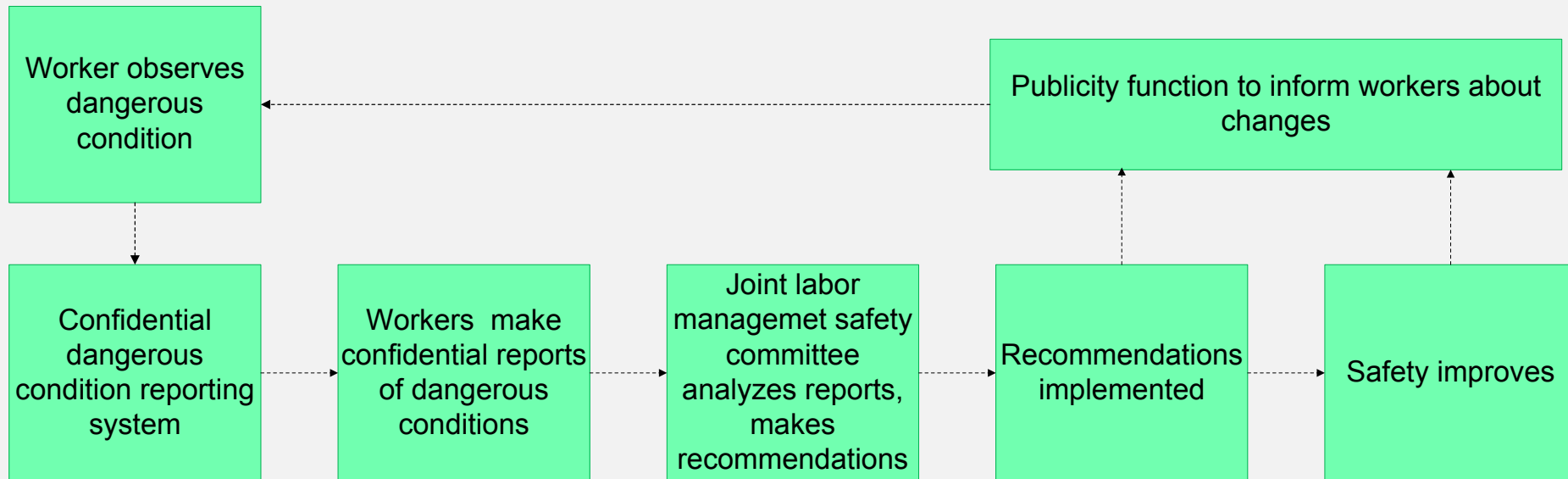
Effective programs may have no foreseeable outcomes or results.

Violence prevention

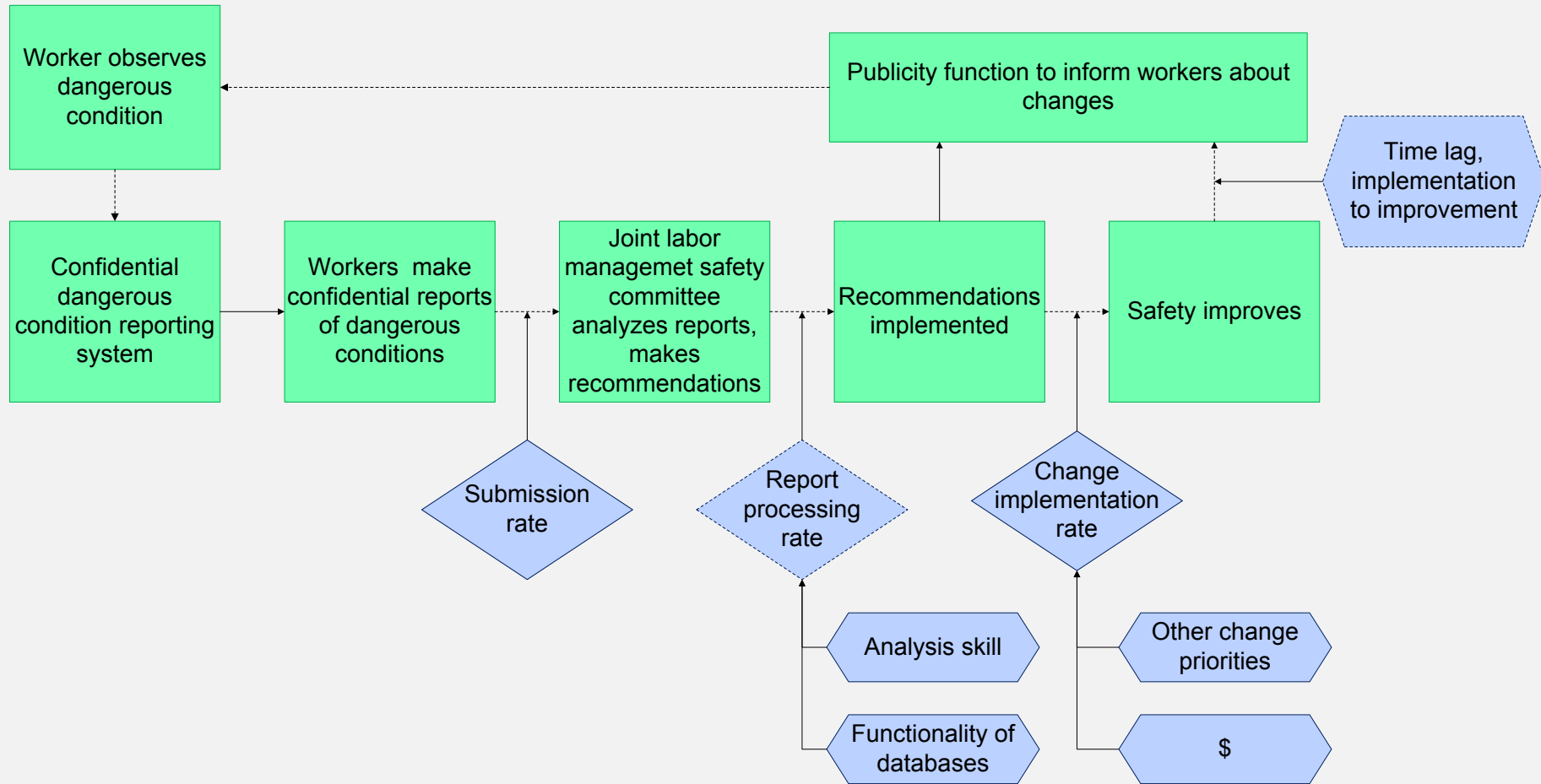
Fund community organizations. Trust them to know what to do.



Thinking about transitions can depress expectations for success.



Thinking about transitions can depress expectations for success.

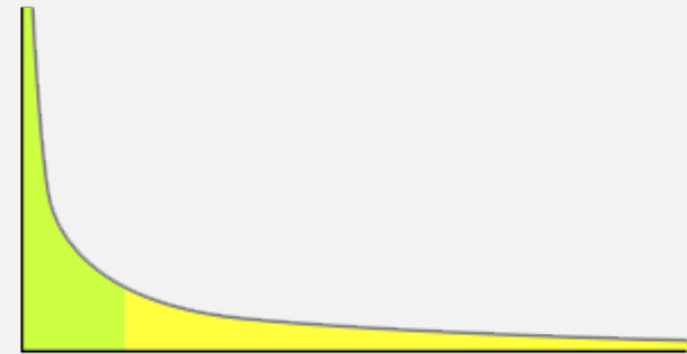


Desired outcomes may be unequally distributed.

Small business entrepreneurship training and support

Skill acquisition
Business success
Attendance by location
Hours of consulting sought

?

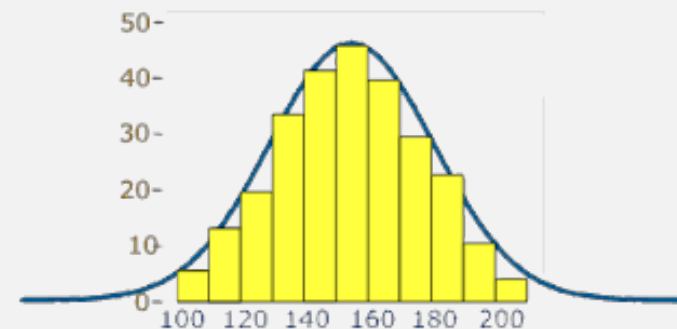


https://en.wikipedia.org/wiki/Power_law

Auto accident prevention

Cost x accident
accidents per location
Public's attitudes about safety

?



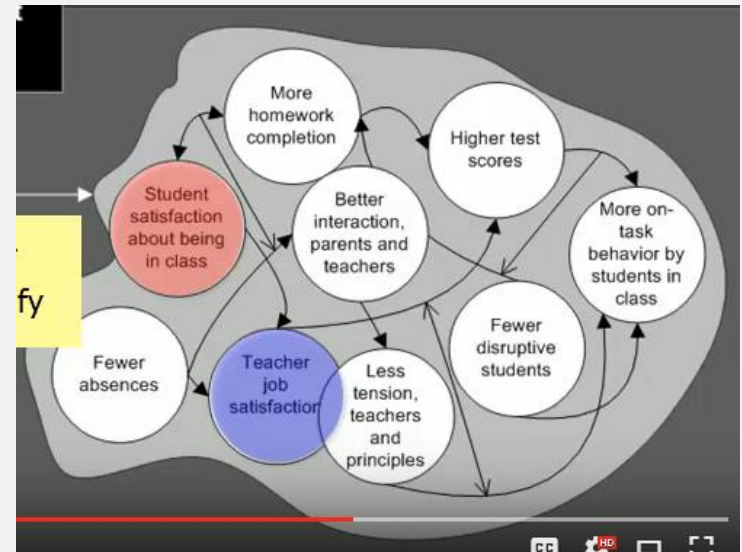
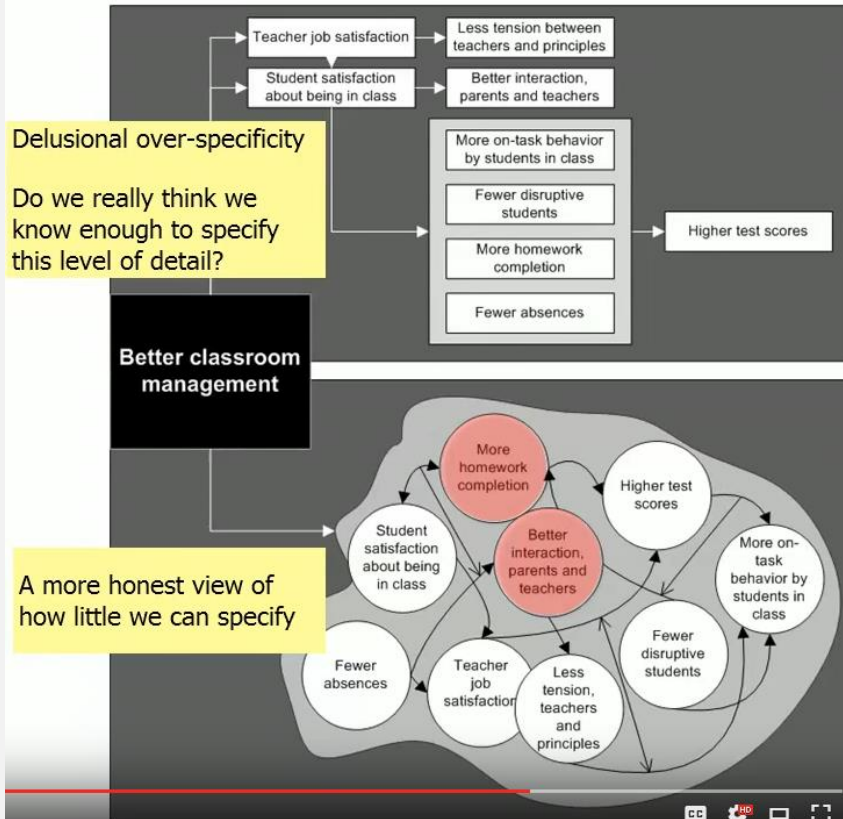
<https://www.mathsisfun.com/data/standard-normal-distribution.html>

Diet and life style

Family dynamics
Exercise x person
Diet and lifestyle
Weight loss x person
Community level health indicators

?

Sensitive dependence → outcome chains are not predictable.



Change can be sudden and discontinuous – Network effects among outcomes.

Network behavior

- Begin with unconnected nodes.
- Randomly pick 2 and connect them.
- Measure total number of connected nodes.

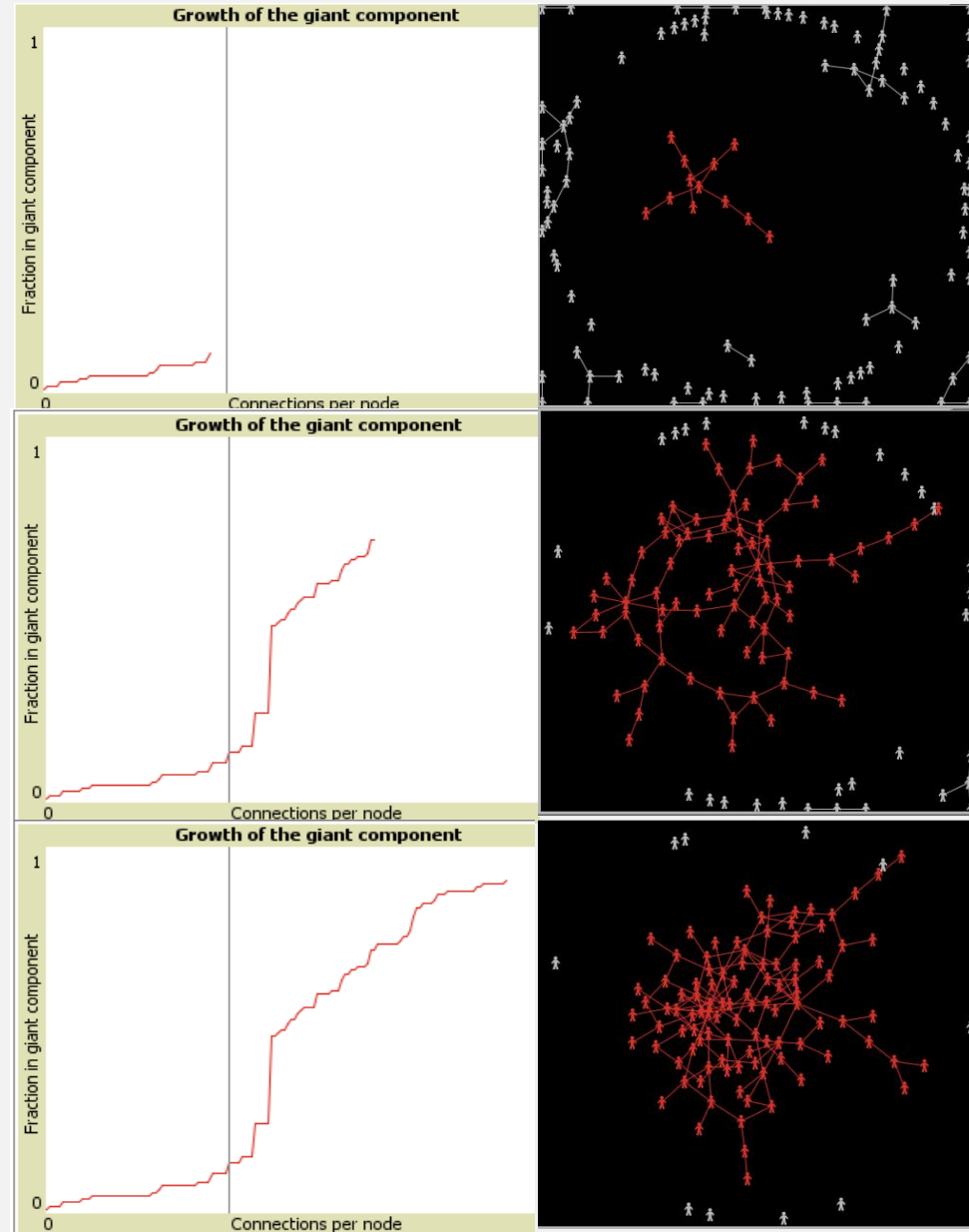
It's easy to miss networks among outcomes.

Example

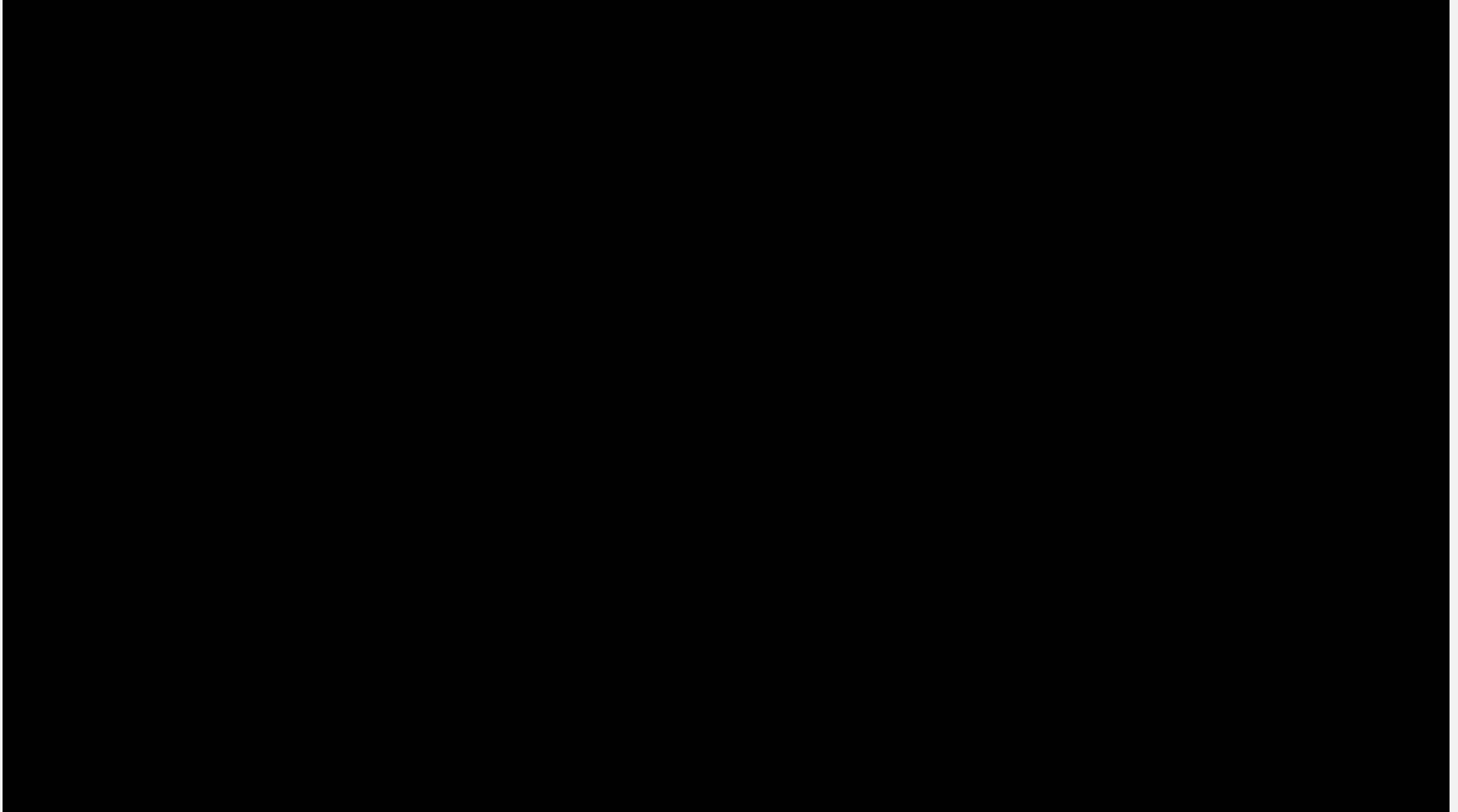
- Work with SMEs to improve operations (inventory control, business development, accounting).
- Expected outcomes = profitability, personal and community consequences of additional income.

Expectations about outcome

Would funders expect or predict all the changes that might flow from more competent companies interacting with each other?



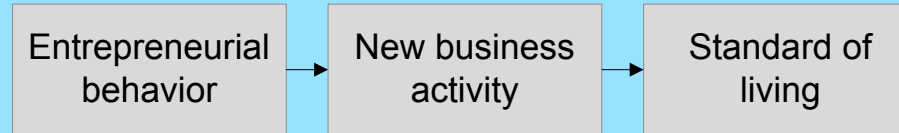
Change can be sudden and discontinuous – network effects among outcomes.



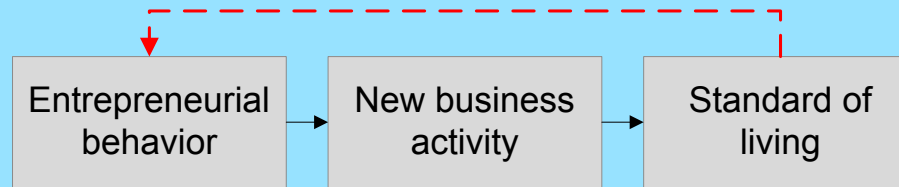
Change can be sudden and discontinuous – Feedback among outcomes.

Three versions of an outcome chain for the same program

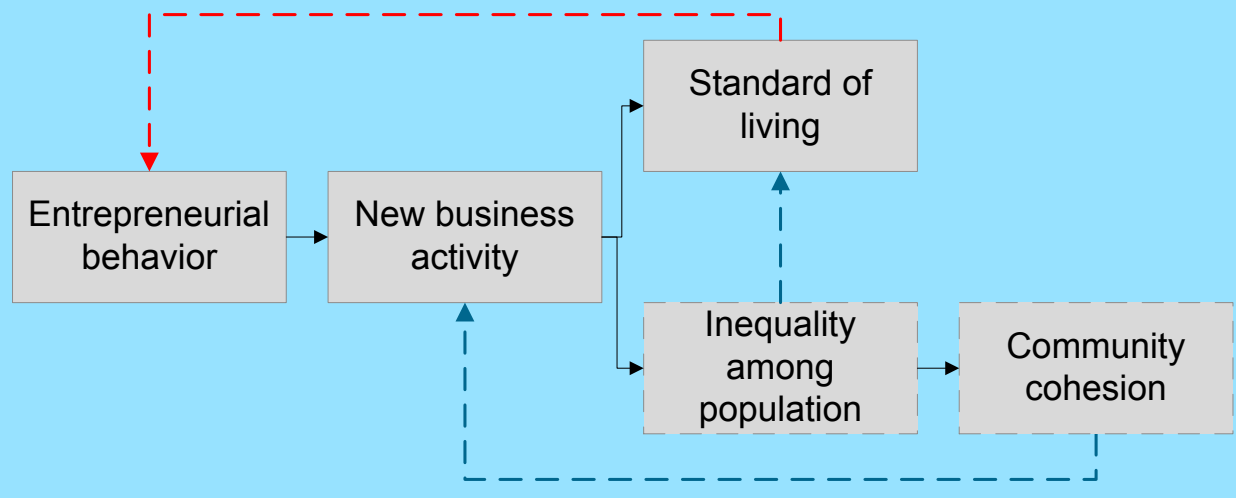
Do we believe the program logic is this straightforward?



Even simple feedback loops can generate non-linear behavior

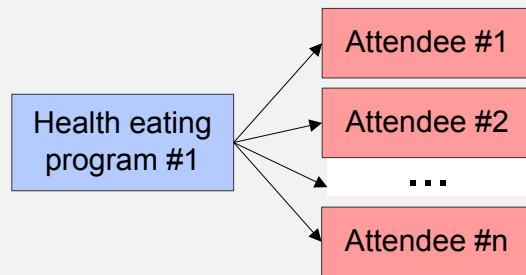


- Interacting feedback loops
- Different latencies
- Non-linear behavior

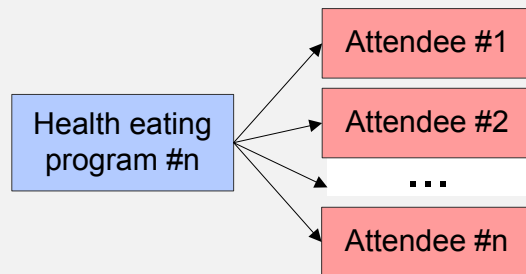


We can have feedback loops *and* unpredictable outcome chains.

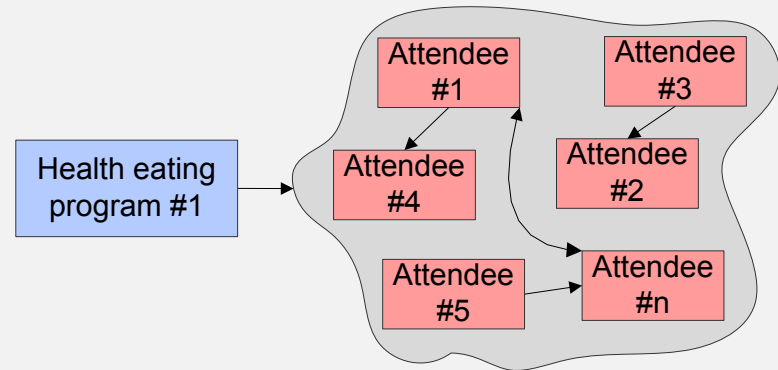
Program impact based on adding individual change



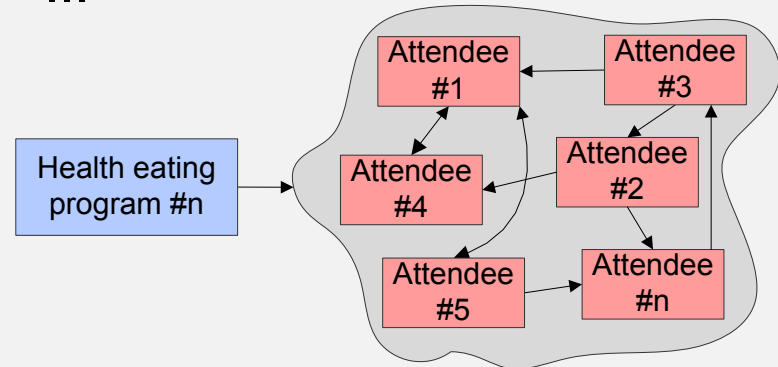
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Program impact based on network effects

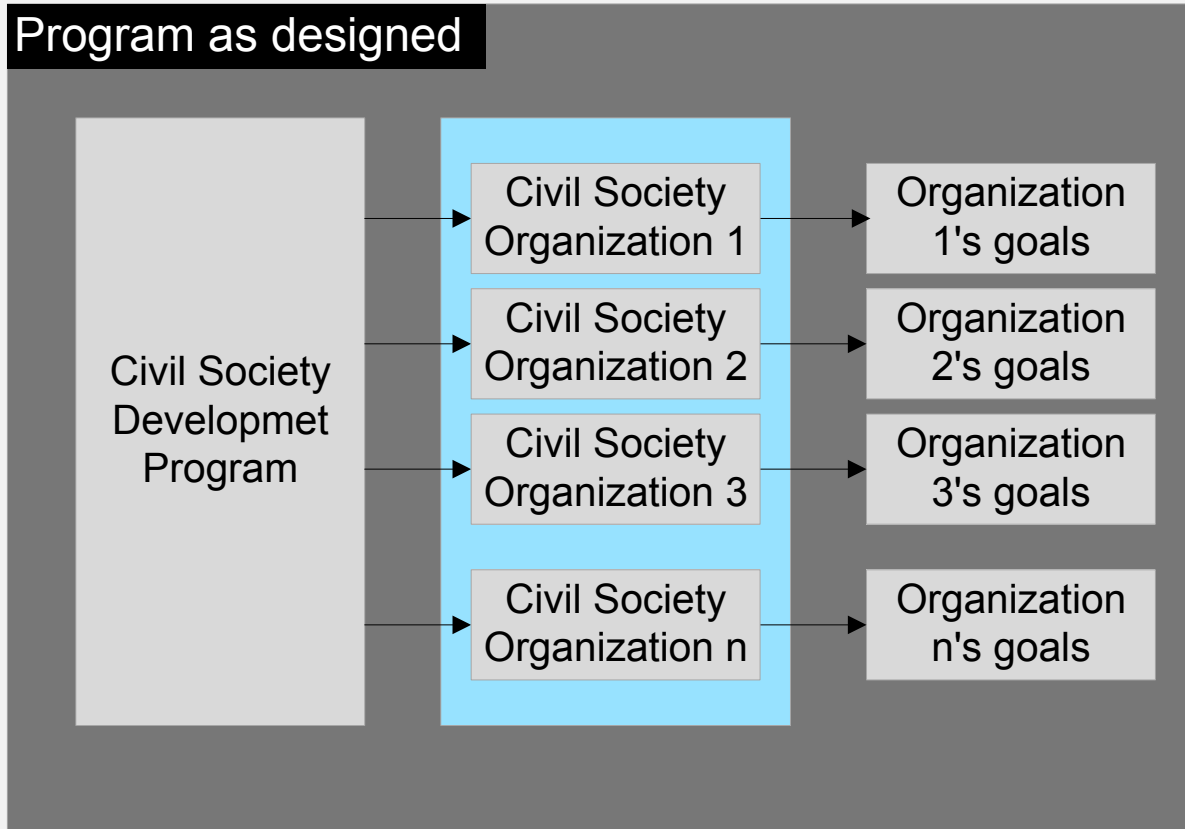


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Profound change can evolve gradually. Here is an illustrative example.

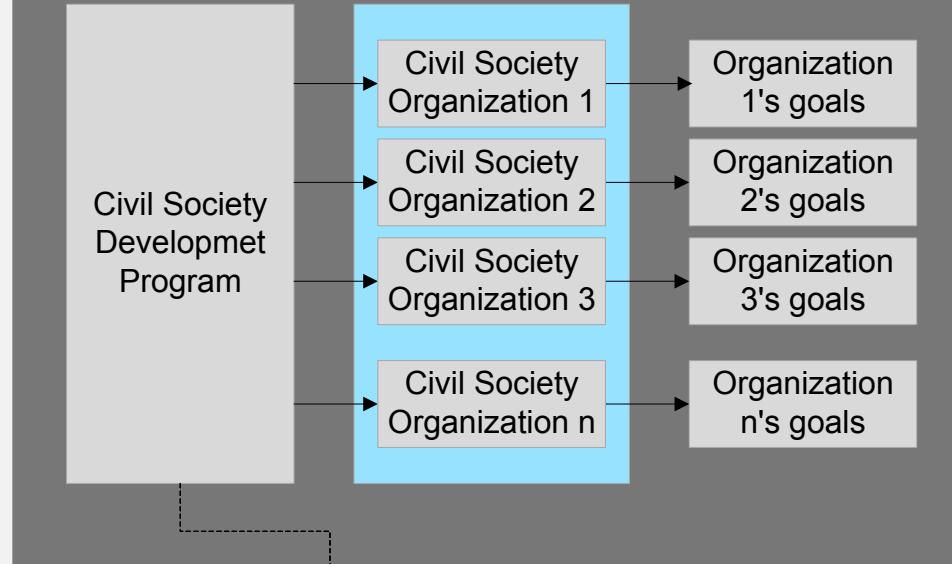
Program designed to support existing civil society organizations



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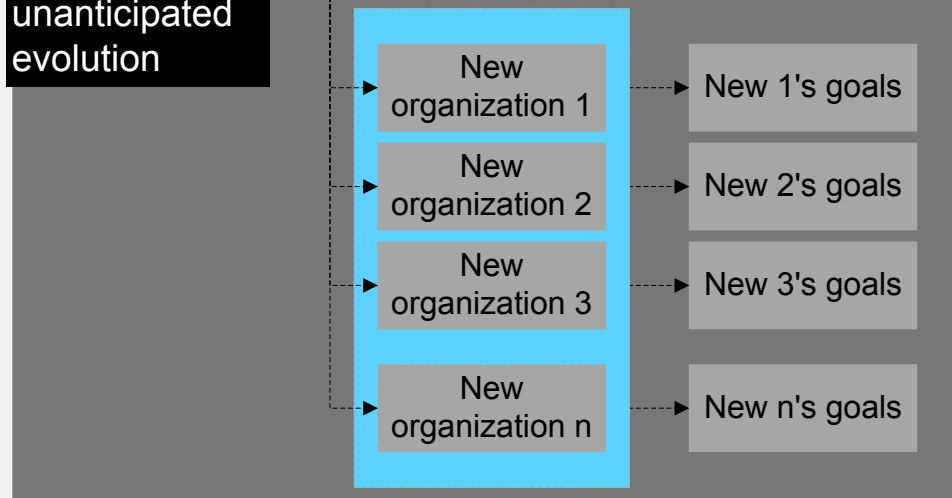
Program designed to support existing civil society organizations

Program as designed



- People notice the new program.
- A few small requests come in for help with a new organization.
- Program staff have some time on their hands.
- One thing leads to another.

Unplanned, unanticipated evolution



It helps to think in terms of a continuum.

- We should have been able to anticipate it, to
- Complex behavior made the event impossible to predict.



Not new or surprising, just not done often enough

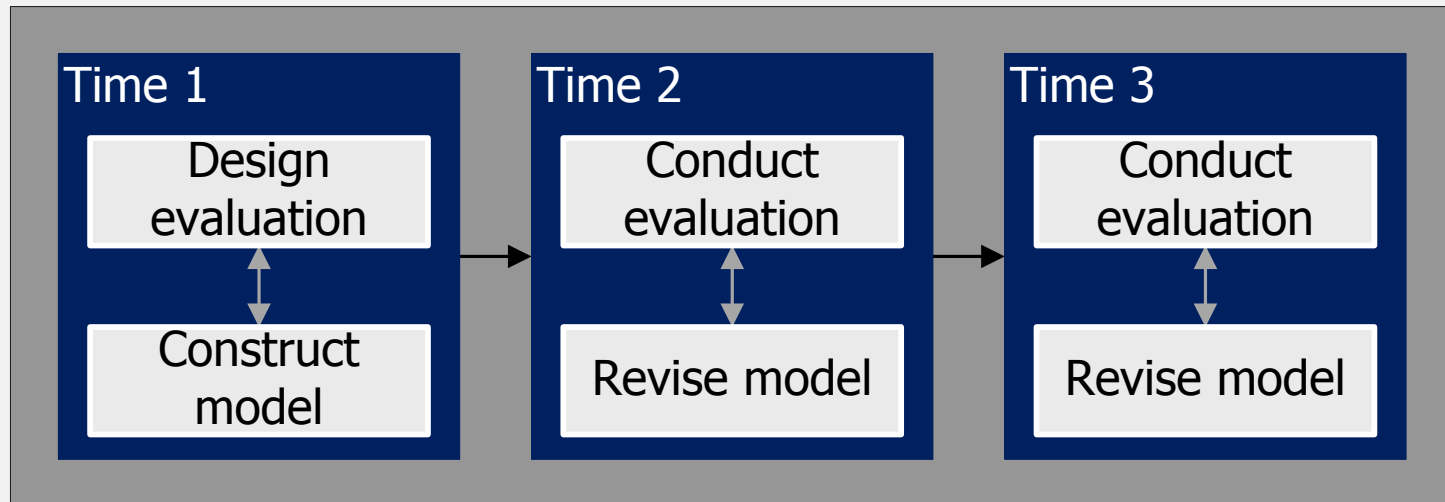
- Literature reviews,
- Diverse input into evaluation design
- People who have worked with similar programs
- Scrutiny of similar programs – service, setting, participants, etc.

Agile methodology

- Methodology
- Data

How can evaluation better assess unintended consequences?

By iterating models and empirical data collection over the life cycle of the evaluation.



Iteration will

- Keep models current
- Guide empirical data collection and evaluation redesign
- Maintain common understanding among evaluators and stakeholders

Further Reading

Article

Morell, J.A. (2017) [From Firefighting to Systematic Action: Toward A Research Agenda for Better Evaluation of Unintended Consequences Paper presented at Unintended Effects of International Cooperation](http://www.ru.nl/publish/pages/814787/morell_2017_10.pdf): An Academic & Policy Cross-over Conference, January 16th and 17th 2017 The Hague, The Netherlands http://www.ru.nl/publish/pages/814787/morell_2017_10.pdf

Blog

[Invitation to a Conversation Between Program Funders and Program Evaluators: Complex Behavior in Program Design and Evaluation](https://evaluationuncertainty.com/2017/02/20/invitation-to-a-conversation-between-program-funders-and-program-evaluators-complex-behavior-in-program-design-and-evaluation/) <https://evaluationuncertainty.com/2017/02/20/invitation-to-a-conversation-between-program-funders-and-program-evaluators-complex-behavior-in-program-design-and-evaluation/>
[Another post on joint optimization of uncorrelated program goals as a way to minimize unintended negative consequences](https://evaluationuncertainty.com/2017/03/16/another-post-on-joint-optimization-of-uncorrelated-program-goals-as-a-way-to-minimize-unintended-negative-consequences/) <https://evaluationuncertainty.com/2017/03/16/another-post-on-joint-optimization-of-uncorrelated-program-goals-as-a-way-to-minimize-unintended-negative-consequences/>

Videos

[Why Program Funders and Evaluators Need to Talk About Complexity](https://www.youtube.com/watch?v=eVu_8sz0ZXg)
https://www.youtube.com/watch?v=eVu_8sz0ZXg