

# Evaluating Complex Interventions in Complex Environments

{ A work in progress

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Society for Academic CME, Spring Meeting, Covington, KY, May 3 2014

& Nothing to declare

Attestation

Assessing the Impact of a Morbidity,  
Mortality, and Improvement (MM&I)  
Conference on Patient Care

{ Jonathan Ross, MD



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- ⌘ Educate for quality
- ⌘ Generate cross-disciplinary dialogue to improve clinical practice and the quality of care

MM&I purpose

- & Create an organizational culture for learning that promotes constructive dialogue in a safe environment
- & Identify areas for practice improvement that would be acted upon by work teams

# MM&I goals

- & Residents
- & Attendings/faculty
- & Medical students
- & Community physicians
- & Nurses
- & Trainees from various programs

# Audience

“Wise evaluators tailor their approach to fit the complexity of the circumstances they face.”

(Patton, 2011, p. 109)

# Situational responsiveness



- & Simple
- & Complicated
- & Complex

# Recognizing the situation

Photo of a birthday cake

Photo of a hand, computer  
keyboard, and mouse

# Simple

Photo of a rocket and two  
astronauts on the surface of  
the Moon

Photo of a group of men and  
women working together on  
a project.

# Complicated

Photo of an adult woman  
yelling through a bullhorn at  
a teenage girl who is texting.

Diagram of a network  
representing dissemination  
of of a specific bit of  
information through Twitter.

# Complex

- & Variability in topics, presenters, and audience
- & Influenced by changing local conditions
- & Educational approach is adaptive, emergent
- & Multiple active ingredients in variable proportions

# Interventional complexity

- & Each situation is unique
- & High uncertainty about how to produce desired results
- & Disagreement over nature of the problem
- & Non-linear interactions within a dynamic system

# Situational complexity

Patton MQ. Developmental evaluation: applying complexity concepts to enhance innovation and use. New York, Guilford Press, 2011.

- & Many interacting variables
- & No simple cause/effect
- & Interactions of parts are not static and constant but dynamic
- & Open system with permeable boundaries that link to social, physical, economic, organizational environment

# Organizational complexity

- ⌘ No one right answer to a situation
- ⌘ No best practices to for every situation
- ⌘ No assurance that any particular act will yield desired results
- ⌘ Dealing in probabilities



Photo of Werner Heisenberg

*Uncertainty*



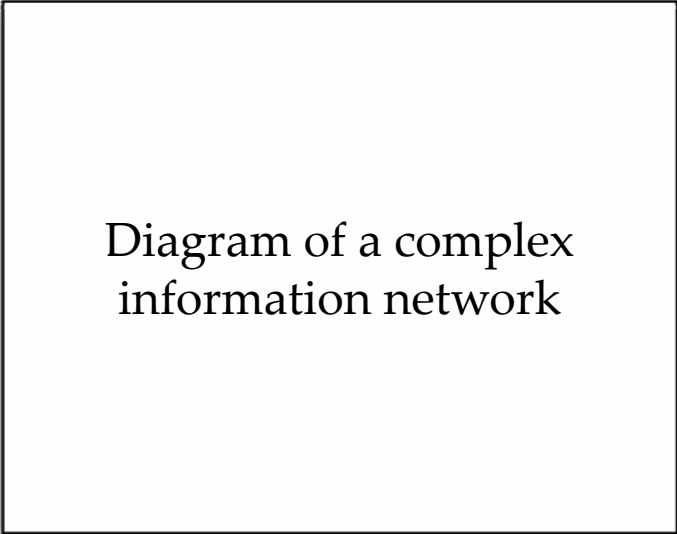


Diagram of a complex  
information network

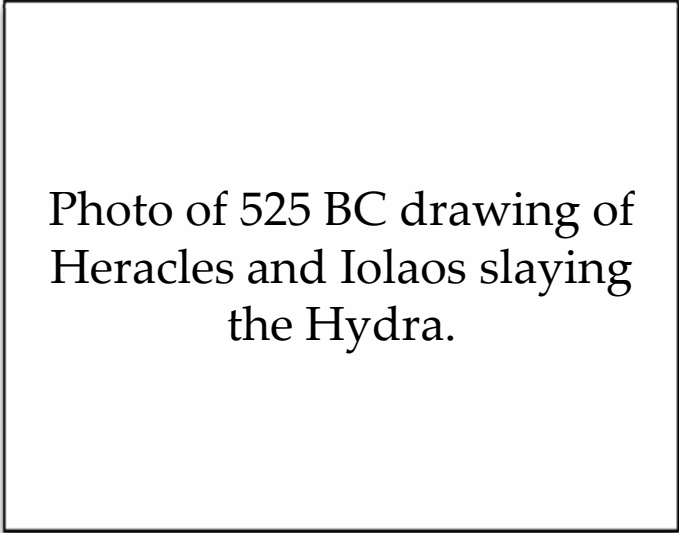


Photo of 525 BC drawing of  
Heracles and Iolaos slaying  
the Hydra.

# From model to metaphor

Doll WE Jr, Trueit D. Complexity and the health care professions. *Journal of Evaluation in Clinical Practice*, 16, 841-848.

- - & Describe the conference and how it functions
  - & Document the effectiveness of the MM&I Conferences re clinical practice and patient outcomes

## Evaluation purposes

- - & Improve medical education at DHMC
  - & Improve the conference's effects on clinical practices and patient outcomes
  - & Add to evidence base on CME impact
  - & Enhance evaluation methodology

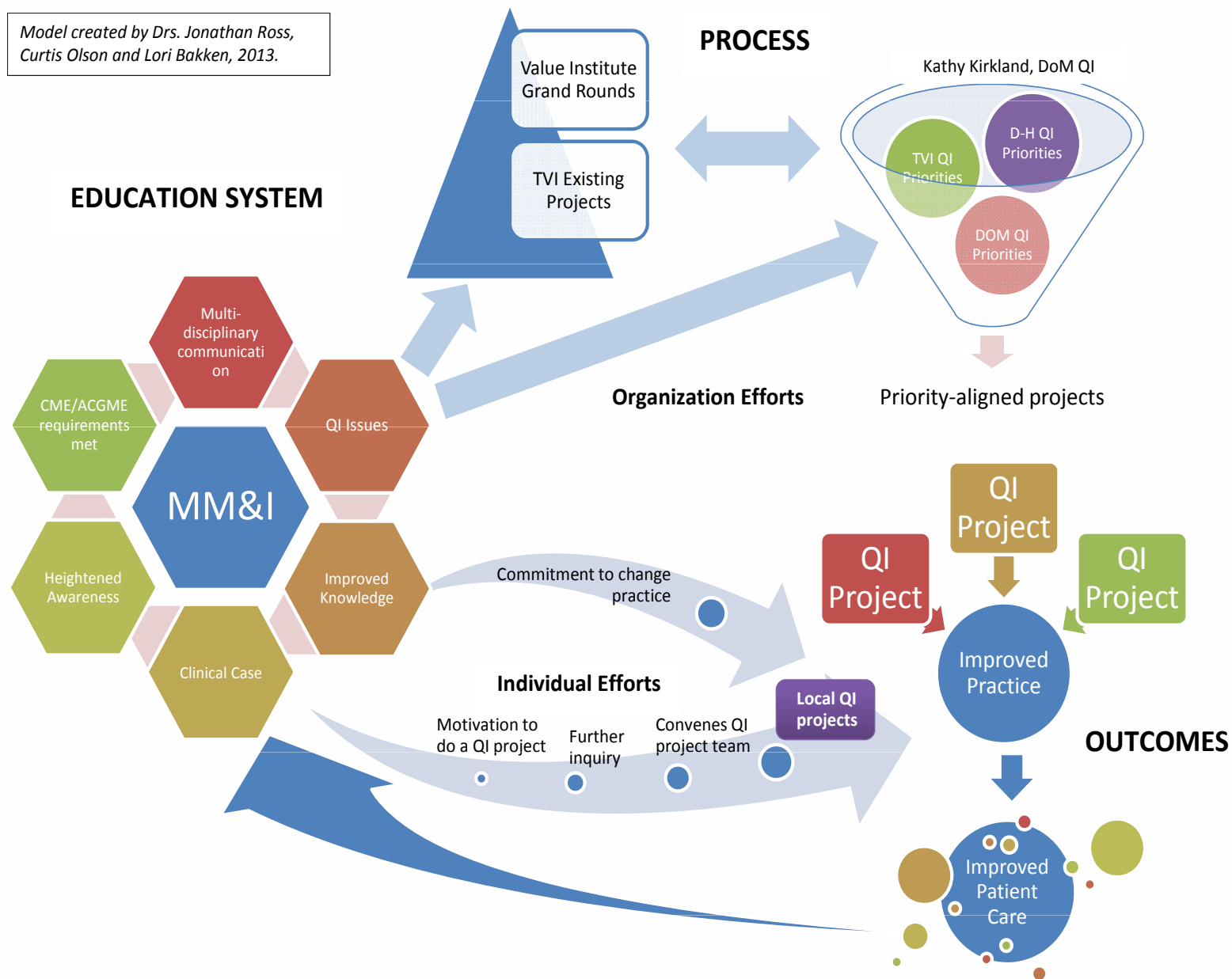
# Evaluation uses

1. Develop a program logic model
2. Consult the literature and experts to fill gaps and build a conceptual framework
3. Compare results to design a more accurate, *systems* theory of change

(Brouselle & Champagne, 2011)

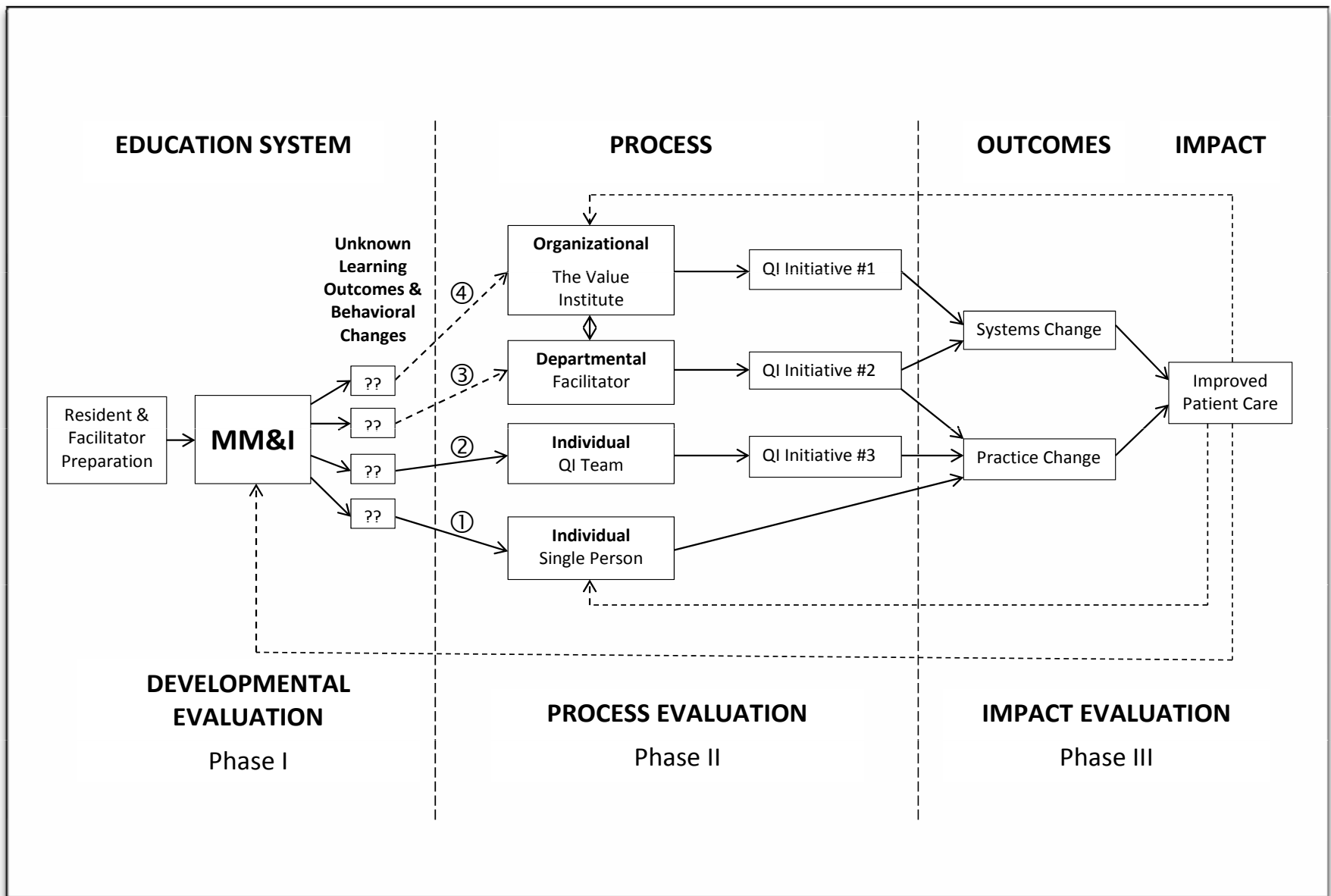
# Logic analysis

Model created by Drs. Jonathan Ross,  
Curtis Olson and Lori Bakken, 2013.



- ⌘ Education can contribute to practice change
- ⌘ However, in complex contexts:
  - ⌘ Education is seldom the primary, proximal cause of practice change
  - ⌘ The impacts of education cannot be known *a priori*

## Education, QI, and complex settings



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