#### SYSTEMS APPROACHES TO URBAN HEALTH

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Source: Jorge Láscar, https://www.flickr.com/photos/jlascar/18794580599

### SYSTEMS PROBLEMS



#### Characteristics

- Resist change
- Counterintuitive results
- Complex determinants
- Require multiple interventions
- Affected by multiple actors
- Related to other problems



Source: http://www.innovationmanagement.se/2010/06/14/complexity-science-and-innovation/

### SYSTEMS PROBLEMS





Source: shiftN, Obesity System Influence Diagram, http://www.shiftn.com/obesity/Full-Map.html

### SYSTEMS PROBLEMS





## CONSEQUENCES OF COMPLEXITY



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Knowing the relationship between two variables doesn't tell you how they will behave in the real world

 Actions have unintended consequences, often across sectors



Source: Newell and Proust (2012). Introduction to Collaborative Conceptual Modelling

#### AEDES AEGYPTI INFESTATION



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Source: Spiegel et al. (2005). Barriers and Bridges to Prevention and Control of Dengue: The Need for a Social–Ecological Approach



# COMPLEXITY AND FOCUS



- Real systems have many parts (feedback loops)
- Understanding parts ≠ understanding system
- Silos lead to restricted focus



# ECOSOCIAL VIEW OF HEALTH



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Source: UNU-IIGH (2016). Thrive Urban.

## GEOGRAPHY AND DECISION-MAKING



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Source: Own calculations using GHSL data and census data.

Source: World Bank (2016) Central America Urbanization Review: Making Cities Work for Central America

# SYSTEMS APPROACHES

- Eco-social view of health recognizing systemic nature of problems
- Systems methods to:
  - Characterize and measure feedback
  - Identify leverage points for action
  - Forecast likely outcomes and compare policy scenarios
- Collaborative work to:
  - Improve communication
  - Provide more complete understanding of systems
  - Assess feasibility of actions
  - Promote stakeholder ownership



Based on Batterman et al (2009). Sustainable Control of Water-Related Infectious Diseases: A Review and Proposal for Interdisciplinary Health-Based Systems Research



#### SYSTEMS INSIGHTS

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Source: Newell and Wasson (2002). Social System vs Solar System: Why Policy Makers Need History. In: Conflict and Cooperation related to International Water Resources: Historical Perspectives. UNESCO, Paris, 2002.



Source: Barry Newell and Katrina Proust

#### SYSTEMS THINKING AND DRUG VIOLENCE McGee S, Joel M, Edson R (201

McGee S, Joel M, Edson R (2011). Mexico's Cartel Problem: A Systems Thinking Perspective







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#### Figure 5: Intervention Points in Mexico's Cartel Problem

# SYSTEMS THINKING AND DRUG VIOLENCE





 McGee S, Joel M, Edson R (2011).
Mexico's Cartel Problem: A Systems Thinking Perspective

