

INTRODUCTION TO COMPLEXITY FOR COMMUNITY DEVELOPMENT PRACTITIONERS

By Kirsten S. Moy

Past Visiting Scholar, Federal Reserve Bank of SF and

Senior Fellow, Aspen Institute

Spring 2020

What is Complexity Science?

Complexity Science is not a new science but a multi-disciplinary way to look at complex phenomena, systems and problems, borrowing and building on the full array of scientific disciplines (e.g., physics, mathematics, computational science, chemistry, biology, ecology, anthropology, sociology, psychology, economics, etc.) While the “explicit” study of complexity and complex systems dates at least to the 1970s, the Santa Fe Institute – the first research institute dedicated to the study of complex systems -- was founded in 1984. One of the Institute’s earliest funders was the MacArthur Foundation.

You likely know more than you think you do about Complexity Science if you’ve ever heard of.....

- *Six degrees of separation, power laws, network theory, ecosystems, emergence, interaction effects, tipping points, long tails, positive deviance, wisdom of crowds.....?*

A Few Examples of Complexity and Complex Systems in the Natural and Man-Made World

- Ant colonies
- The human brain
- The stock market
- Voting behavior
- The World Wide Web
- Neighborhoods and communities

An Example of Complexity in Nature



What is a Complex System?

- A **Complex System (CS)** is a system in which there are a large number of independent entities with no centralized control and where simple rules of behavior for the individual entities give rise to complex collective behavior.
- A **Complex Adaptive System (CAS)** is a Complex System capable of learning, adaptation and evolution.....
- Because of all the relationships and interactions between entities, there is no simple cause and effect in a **CAS**, and the reaction of the system to interventions and stimuli cannot be dependably predicted.

The Difference between Simple or Complicated Problems and Complex Problems

- ***Simple problems*** can be fully understood and predictably solved by following a set recipe or protocol.
- ***Complicated problems***: (e.g., like sending a rocket to the moon) involve a larger scale and have increased requirements around coordination and specialized expertise; but achieving one success can predictably lead to another successful outcome with a relatively high degree of certainty.

What is a Complex Problem?

- ***A Complex Problem*** is one that cannot be fully specified and predictably solved with a set recipe or established protocol.

An Example of a Complex Problem in Every Day Life

- Raising a child is a complex problem. Formulas have limited application and successfully raising one child provides experience but no assurance of success with the next.

What is Community Development

- The amelioration of poverty and its negative manifestations in underserved communities (*Traditional*)
- According to some CDC leaders, “making their communities competitive for investment”
- “The work of building and sustaining neighborhoods” (*BECCD definition*)
- “A process where community members come together to take collective action and generate solutions to common problems” (*United Nations definition*)
- “the emergent property of complex and dynamic social systems...a means of managing chaos, building resilience and devising innovative collective solutions to intractable problems” (from *The Well-Connected Community* by Alison Gilchrist, UK scholar and practitioner)

(Note: In the United States in the 1960s, the term “community development” was sometime used as a euphemism for “urban renewal”)

Why do we need Complexity Science in Community Development?

- Communities are Complex Adaptive Systems (CAS); and
- Most problems in the field that we know of as Community Development are Complex Problems

Learnings from *Emergent Detroit*, a case study on complexity and grassroots community and economic development in one city.....

Emergent Detroit: the Revitalization of Detroit's Neighborhoods from the Ground Up

- Much touted: the attempted revitalization of the Detroit through top-down redevelopment initiatives especially of the Urban Core: e.g., building of the casinos, move of the headquarters of Quicken Loans to downtown Detroit, redevelopment of the city's riverfront, revival of the Midtown corridor, building of the light rail from Downtown to the edge of Midtown, etc.

Emergent Detroit: the Revitalization of Detroit's Neighborhoods from the Ground Up

- The other story: the emerging redevelopment of Detroit's neighborhoods not by the City but through resident efforts: e.g., through
 - *Placemaking Initiatives*: a “collaborative process by which ...(residents) can shape (their) public realm.....With community-based participation at its center, an effective Placemaking process capitalizes on a local community's assets, inspiration, and potential...“it is a strategy for building community capacity through place.”
 - *Urban Agriculture*, the development of a local economic sector
 - *Filling of Critical Gaps in Community Infrastructure*: Community-owned Internet
 - *The launching of BECDD (Building the Engine of Community Development in Detroit) Initiative*: a “citywide collaborative process to strengthen all of Detroit's neighborhoods by creating a well-coordinated, effective and equitable framework for community development in the city”

Emergent Detroit: Examples of What Complexity Has Wrought in Detroit Neighborhoods

- *Placemaking*:
 - *ioby* (since 2014) – 71 projects, with \$192,600 raised from over 2,200 donors, mostly individuals living within a 5-mile radius
 - *Detroit Soup* (as of 2010) – over 151 SOUP dinners with over 15,000 in attendance and \$132,000 raised for projects in the arts, education, social justice, housing, small businesses, etc.
 - *Public Spaces Community Places*: the State of Michigan's placemaking initiative has provided matched funding of up to \$50,000 for projects in a number of Detroit neighborhoods, but the first funds must be crowdfunded.

Emergent Detroit: Examples of What Complexity Has Wrought in Detroit Neighborhoods

- *Urban Agriculture – a legacy of the Great Migration*: in 2017, there were 865 families growing in backyards, 440 community groups reclaiming vacant spaces, 136 school gardens, 106 market-focused gardens bringing fresh local food to Detroiters, engaging over 23,000 individuals growing food for themselves, their families and their community, in one of the largest urban food deserts in the U.S.

Emergent Detroit: Examples of What Complexity Has Wrought in Detroit Neighborhoods

Filling Critical Gaps in Community Infrastructure:

- A May 22, 2016 New York Times article identified Detroit as the city with the worst rate of internet access of any large American city, with 4 out of 10 of Detroit residents lacking broadband
- City officials and economists among others identified the lack of internet access as a crucial if underappreciated factor in the dismal employment rates plaguing many of the city's neighborhoods.

Emergent Detroit: Examples of What Complexity Has Wrought in Detroit Neighborhoods

- In 2012 Detroit-based Allied Media, a leader in media-based organizing, partnered with the Open Technology Institute of the New America Foundation to create the *Digital Stewards Program* to train neighborhood leaders in designing and deploying community wireless networks with a commitment to “access, participation, common ownership and healthy communities”
- The Equitable Internet Initiative: a collaboration sponsored by Allied Media between the Detroit Community Technology Project and three community-based organizations to increase internet access through the distribution of shared Gigabit internet connections in three neighborhoods in Detroit that are poorly served by conventional providers

Emergent Detroit: Examples of What Complexity Has Wrought in Detroit Neighborhoods

BECDD: as of early 2018, more than 140 of Detroit CBOs and institutions have participated in the multi-phase BECDD effort launched in 2015, reaching consensus on definitions for community development and Community Development Organizations (CDOs) in Detroit, what constitute the critical elements for a Community Development System in Detroit; and the forging of a unified voice for community development in the city.

Emergent Detroit: Demonstrations of Aspects of Complexity* at Work in Detroit Neighborhoods:

- Self-organization
- Emergence
- Development and strengthening of Strong and Weak Ties in Networks
- Feedback Loops and Interaction Effects
- Development of local Ecosystems, including organizations, networks, processes and infrastructure in different sectors
- Positive Deviance
- Wisdom of Crowds

*(*See Complexity Science Primer for definitions)*

Learning from this and other case studies: What applying the frameworks, concepts and approaches of Complexity Science to Community Development would mean:

- *Working from an ecosystem perspective, paying attention to history and culture, identifying community assets, and building or strengthening key networks/relationships, processes and infrastructure*
- *Understanding the system dynamics of the ecosystem in question (e.g., tipping points, feedback loops, interaction effects, drivers)*
- *Focusing on root causes vs. symptoms (i.e., upstream vs. downstream)*
- *Committing to and operationalizing community engagement – working from the ground up*

Learning from this and other case studies: What applying the frameworks, concepts and approaches of Complexity Science to Community Development would mean:

- *Replacing negative cycles of decline and disinvestment with virtuous cycles, building not on the needs and deficiencies of a community but on its assets*
- *Understanding and intervening at the different levels at which an issue or problem occurs (e.g., the neighborhood, city, region, state and national levels) with appropriate strategies and actions at each level*
- *Allowing for learning, adaptation and emergence*
- *Looking for and learning from “unintended consequences”*
- *Seeking out the positive deviants in the community and letting them inspire and lead.*

A New Definition of Community Development from a Complexity Science Perspective

- Community development is not something *done to*, or even *done for*, a group of people; it is something that *emerges* when there is social capital and cohesion and when the freedom, relationships, means and resources needed for development or transformation exist within an enabling ecosystem.

Final Thoughts

- Social capital and cohesion are a necessary (but insufficient) condition for community development; no further development of any kind is possible without it.
- Building equity and inclusion is only possible working from an ecosystem framework and perspective
- Virtually all the outcomes we seek to achieve in communities are emergent phenomena and cannot be designed and engineered top-down; we can only create the conditions from the ground up for the outcomes to emerge.

Contact Information

- kmoyaspensf@gmail.com