

# Social-Ecological System Resilience: Role of Environmental Education

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# Change



<http://www.unfpa.org/swp/swpmain.htm>

<http://www.taf.org/graphics/katrina-flooding.JPG>

<http://www.un.org.pk/latest-dev/chaman-camps/index.htm>

<http://www.infiniteunknown.net/2008/05/30/military-suicide-rate-increased-again>

# Social-Ecological System Resilience

*Capacity of a social-ecological system to tolerate disturbance without collapsing and to rebuild when necessary.*

*Because change is inevitable, resilience is critical to sustainability.*

# Resilience and Sustainability

*When massive transformation occurs, resilient systems contain the experience and the diversity of options needed for renewal and development. Sustainable systems need to be resilient.*

*(Folke et al. 2002)*



**Resilience Alliance**

*research on resilience in social-ecological systems -  
a basis for sustainability*

How do we build the capacity of  
a system to respond to,  
and learn from,  
change?

**Does EE have a role?**

# What makes a system resilient?

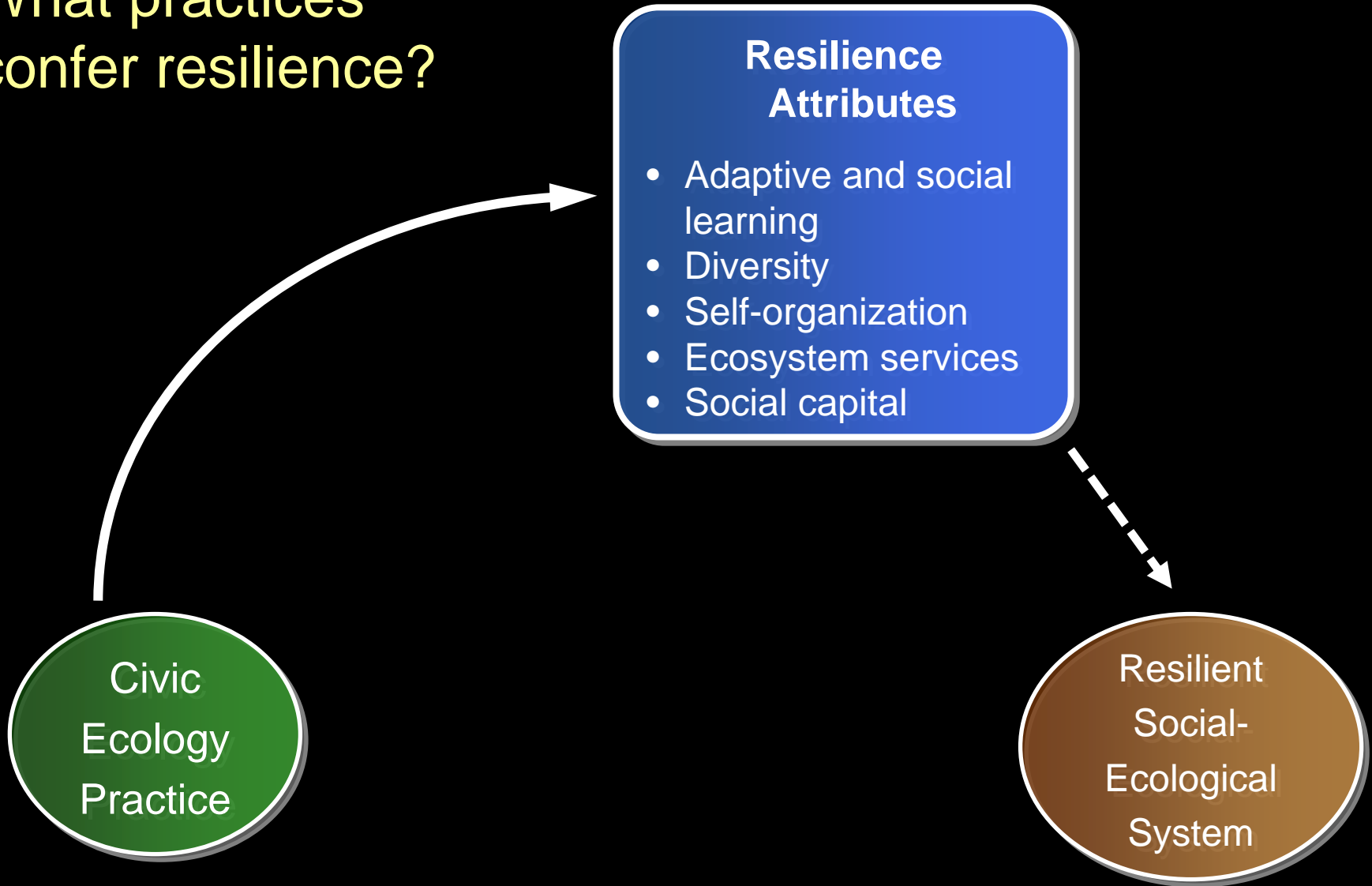
## Resilience Attributes

- Adaptive and social learning
- Diversity
- Self-organization
- Ecosystem services
- Social capital

Resilient  
Social-  
Ecological  
System

Folke et al. 2002  
Walker & Salt 2006  
Krasny & Tidball 2009

# What practices confer resilience?



Folke et al. 2002  
Walker & Salt 2006  
Krasny & Tidball 2009

# Civic Ecology Practice

*Environmental stewardship  
actions of community members  
who:*



- face negative impacts when a patch of habitat has fallen into an undesirable state;
- recognize the potential of the patch of land for contributing to well-being; and
- take it upon themselves to restore the patch so that it provides social and ecological services.

# Civic Ecology Practices



Community  
gardening

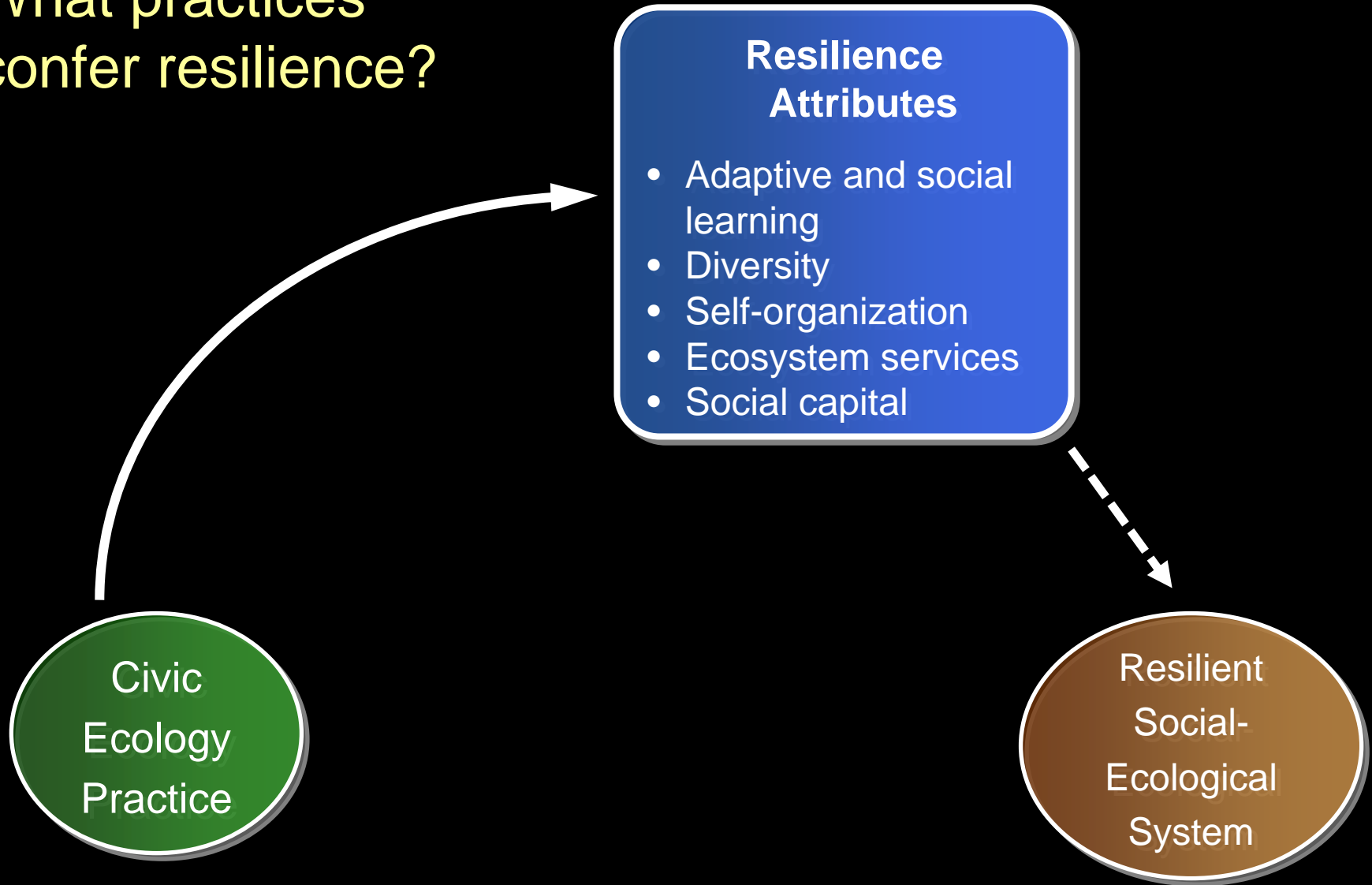


Community  
forestry



Watershed  
restoration

# What practices confer resilience?



Folke et al. 2002  
Walker & Salt 2006  
Krasny & Tidball 2009

# Resilience Attributes and Community Gardening

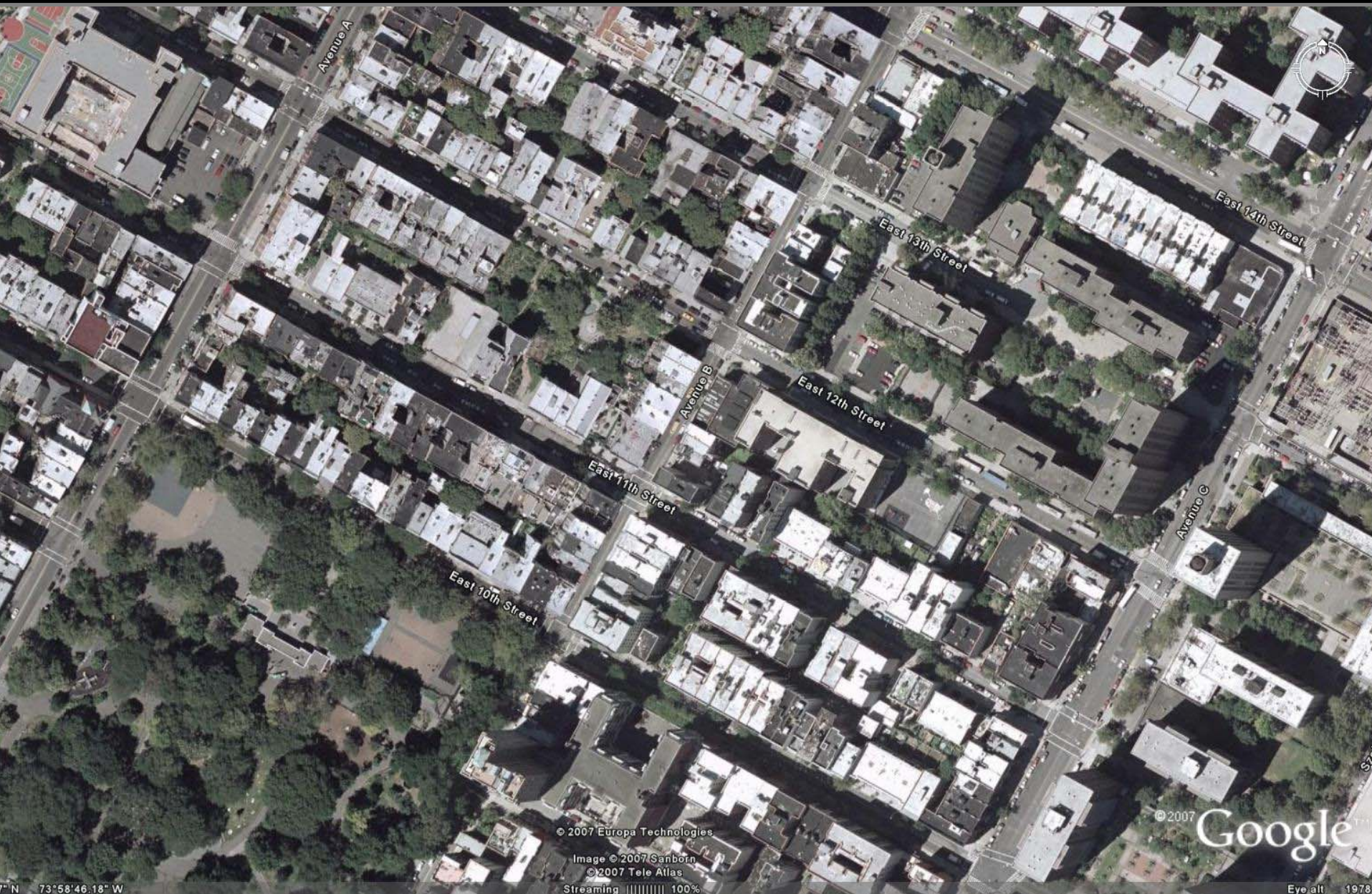
*biological and cultural  
diversity*

*ecosystem services*



# Resilience Attributes and Community Gardening

## *heterogeneity of landscape mosaics*



## Resilience Attributes and Community Gardening

*diverse knowledge  
and experience*

*adaptive learning*



# Resilience Attributes and Community Gardening

*social learning*  
*self-organization*



# Resilience Attributes and Community Gardening

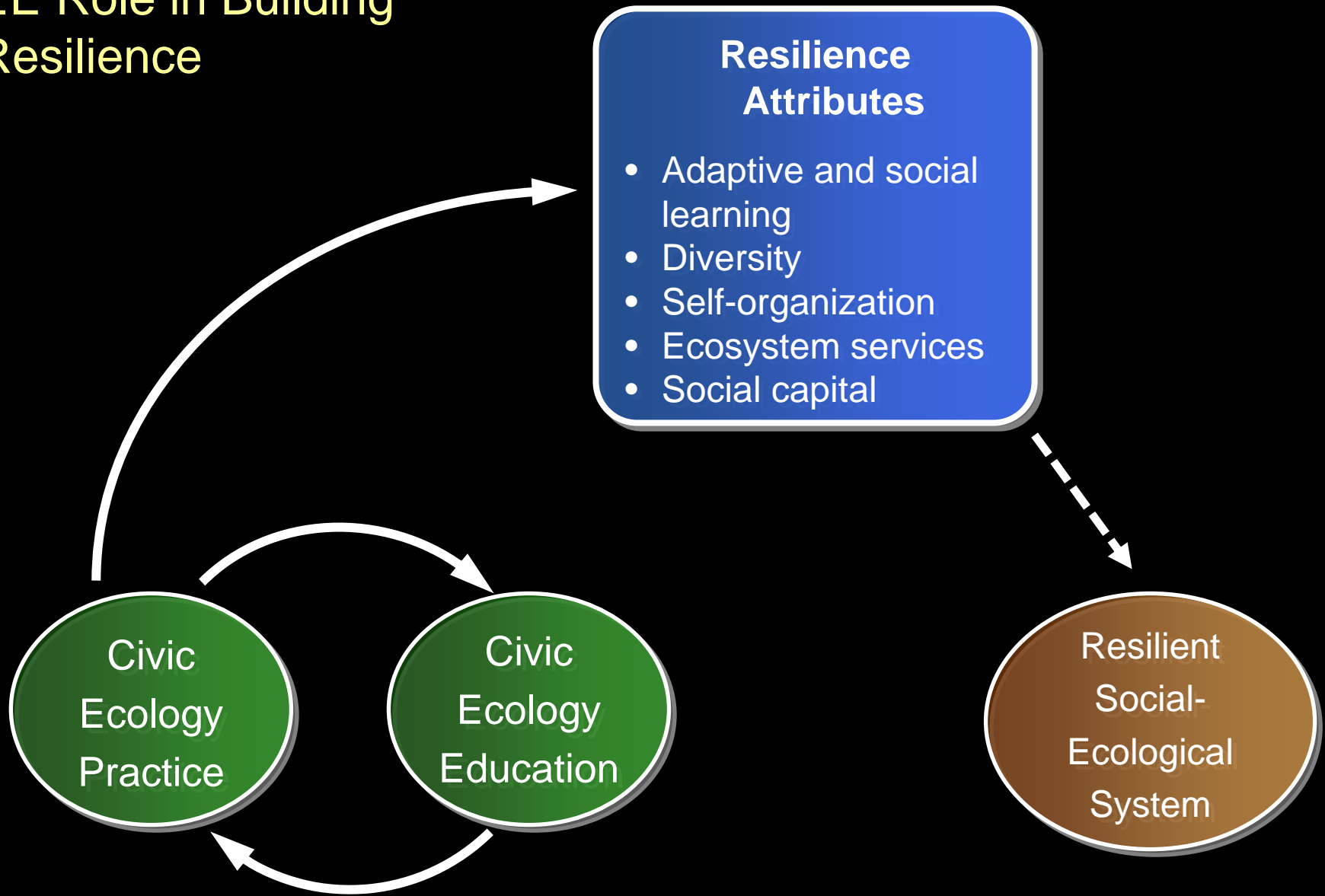
*social capital*



# Learning in Civic Ecology



# EE Role in Building Resilience



Folke et al. 2002  
Walker & Salt 2006  
Krasny & Tidball 2009

# Resilience and Learning in Civic Ecology Practice

*Lee* Civic Ecology Practice  
in Korea

*Kudryavtsev* EE embedded in Civic  
Ecology Practice in  
New York City

*Ballard* Participatory Action  
Research and  
Resilience

*Tidball* An Ecology of EE



- SES looks at community and ecosystem level resilience.
- EE looks largely at individual outcomes----
- How do we integrate the two?