DEFINITIONS OF COMMUNITY RESILIENCE: AN ANALYSIS

A CARRI Report

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INTRODUCTION

Resilience (derived from the Latin *resalire*, to spring back) has become an important term in the language of many disciplines ranging from psychology to ecology. Unfortunately, there is no commonly accepted definition of resilience that is used across all disciplines. The purpose of this note is to analyze the more widely used definitions in terms of their core concepts. The definitions which are most valuable in terms of improving the ability of communities to recover after disasters explicitly or implicitly contain the following five core concepts:

Attribute:	resilience is an attribute of the community.
Continuing:	a community's resilience is an inherent and dynamic part of the community.
Adaptation:	the community can adapt to adversity.
Trajectory:	adaptation leads to a positive outcome for the community relative to its state after the crisis, especially in terms of its functionality.
Comparability:	the attribute allows communities to be compared in terms of their ability to positively adapt to adversity.

DEFINITIONS

The term *resilience* was first used in the physical sciences to denote the behavior of a spring. In the 1970's and 1980's, *resilience* was adapted by the ecological and psychological communities to describe somewhat different phenomena.

- In psychology, the term was used to describe groups that did not change behavior in spite of adversity (e.g., Werner).
- In ecology, the term was used to describe ecosystems that continued to function more or less the same in spite of adversity (most notably Holling).

Resilience began being used in terms of disasters, especially by the engineering community (particularly referring to physical infrastructure), in the 1980's, and was related to the concept of being able to absorb and recover from a hazardous event. Since that time, hybrid definitions

have arisen that combine the engineering with the ecological, or the ecological with the behavioral.

Table 1 contains many of the most widely recognized definitions of resilience relevant to communities. The definitions generally reflect how the community responds to some adverse event, a crisis. However, there are significant differences that transcend their original intended domain of use. Thus, while one could simply categorize the definitions in terms of domains (as indicated in the Table), it is probably more useful to look for themes among the core concepts within the definitions that can be used for classification.

One way the definitions can be classified is by contrasting "Being vs Becoming." Many of the ontological definitions of *resilience* begin with "the ability to ...," for example, those of Brown, Pfefferbaum, and Adger, i.e., *resilience* is an attribute of the community. Others take a phenomenological view of *resilience* as a process – most notably Norris, but also Sonn, and the Centre for Community Enterprise.

TABLE 1

DEFINITIONS OF RESILIENCE

First author, year	Domain	Definition
Gordon, 1978	Physical	The ability to store strain energy and deflect elastically under a load without breaking or being deformed
Bodin, 2004	Physical	The speed with which a system returns to equilibrium after displacement irrespective of how many oscillations are required
Holling, 1973	Ecological system	The persistence of relationships within a system; a measure of the ability of systems to absorb changes of state variables, driving variables, and parameters, and still persist
Holling, 1995	Ecological system	Buffer capacity or the ability of a system to absorb perturbation, or the magnitude of disturbance that can be absorbed before a system changes its structure
Abel, 2001	Ecological system	The ability to persist through future disturbances

Waller, 2001	Ecological system	Positive adaptation in response to adversity; it is not the absence of vulnerability, not an inherent characteristic, and not static
Brock, 2002	Ecological system	The transition probability between states as a function of the consumption and production activities of decision makers
Klein, 2003	Ecological system	The ability of a system that has undergone stress to recover and return to its original state; more precisely (i) the amount of disturbance a system can absorb and still remain within the same state or domain of attraction and (ii) the degree to which the system is capable of self-organization
Anderies, 2004	Ecological system	The amount of change or disruption that is required to transform the maintenance of a system from one set of mutually reinforcing processes and structures to a different set of processes and structures
Ott, 2004	Ecological system	Maintenance of natural capital (as the basis for social systems' functioning) in the long run
Walker, 2004	Ecological system	The capacity of a system to absorb disturbance and reorganize while undergoing change so as to still retain essentially the same function, structure, identity, and feedbacks
Adger, 2005	Ecological system	The capacity of linked social-ecological systems to absorb recurrent disturbances ... so as to retain essential structures, functions, and feedbacks
Longstaff, 2005	Ecological system	The ability by an individual, group, or organization to continue its existence (or remain more or less stable) in the face of some sort of surprise….Resilience is found in systems that are highly adaptable (not locked into specific strategies) and have diverse resources

Resilience Alliance, 2006	Ecological system	The capacity of a system to absorb disturbance and reorganize while undergoing change so as to still retain essentially the same function, structure and feedbacks—and therefore the same identity.
Resilience Alliance, 2009	Ecological system	The capacity of a system to tolerate disturbance without collapsing into a qualitatively different state that is controlled by a different set of processes.
Adger, 2000	Ecological and social systems	The ability of communities to withstand external shocks to their social infrastructure
Adger, 2003	Ecological and social systems	The ability to persist (i.e., to absorb shocks and stresses and still maintain the functioning of society and the integrity of ecological systems) and the ability to adapt to change, unforeseen circumstances, and risks
Comfort, 1999	Community	The capacity to adapt existing resources and skills to new systems and operating conditions
Mileti, 1999	Community	(The ability to) withstand an extreme event without suffering devastating losses, damage, diminished productivity, or quality of life without a large amount of assistance from outside the community
Bruneau, 2003	Community	The ability of social units to mitigate hazards, contain the effects of disasters when they occur, and carry out recovery activities in ways that minimize social disruption and mitigate the effects of future earthquakes
Godschalk, 2003	Community	A sustainable network of physical systems and human communities, capable of managing extreme events; during disaster, both must be able to survive and function under extreme stress

Timmerman, 1981	Community	A system's capacity to absorb and recover from the occurrence of a hazardous event; reflective of a society's ability to cope and to continue to cope in the future
Wildavsky, 1991	Community	The capacity to cope with unanticipated dangers after they have become manifest, learning to bounce back
Brown, 1996	Community	The ability to recover from or adjust easily to misfortune or sustained life stress
Sonn, 1998	Community	The process through which mediating structures (schools, peer groups, family) and activity settings moderate the impact of oppressive systems
Paton, 2001	Community	The capability to bounce back and to use physical and economic resources effectively to aid recovery following exposure to hazards
Center for Community Enterprise, 2000	Community	Intentional action to enhance the personal and collective capacity of its citizens and institutions to respond to, and influence the course of social and economic change
Chenoweth, 2001	Community	The ability to respond to crises in ways that strengthen community bonds, resources, and the community's capacity to cope
Ganor, 2003	Community	The ability of individuals and communities to deal with a state of continuous long term stress; the ability to find unknown inner strengths and resources in order to cope effectively; the measure of adaptation and flexibility
Kofinas, 2003	Community social resilience	Two types of social resilience: (1) a social system's capacity to facilitate human efforts to deduce the trends of change, reduce vulnerabilities, and facilitate adaptation; and (2) the capacity of a [social-ecological system] to sustain preferred modes of economic activity

Quinlan, 2003	Community	Resilience consists of (1) the amount of change a system can undergo and still retain essentially the same structure, function, identity, and feedbacks on function and structure, (2) the degree to which a system is capable of self-organization (and re-organize after disturbance), and (3) the degree to which a system expresses capacity for learning and adaptation
Ahmed, 2004	Community	The development of material, physical, socio-political, socio-cultural, and psychological resources that promote safety of residents and buffer adversity
Kimhi, 2004	Community	Individuals' sense of the ability of their own community to deal successfully with the ongoing political violence
Coles, 2004	Community	A community's capacities, skills, and knowledge that allow it to participate fully in recovery from disasters
Allenby, 2005	Community	The capability of a system to maintain its function and structure in the face of internal and external change and to degrade gracefully when it must
Gunderson, 2005	Community	The return or recovery time of a social-ecological system, determined by (1) that system's capacity for renewal in a dynamic environment and (2) people's ability to learn and change (which, in turn, is partially determined by the institutional context for knowledge sharing, learning, and management, and partially by the social capital among people)
Pfefferbaum, 2005	Community	The ability of community members to take meaningful, deliberate, collective action to remedy the impact of a problem, including the ability to interpret the environment, intervene, and move on

Subcommittee on Disaster Reduction, 2005	Community Society	The capacity of a system, community, or society potentially exposed to hazards to adapt, by resisting or changing, in order to reach and maintain an acceptable level of functioning and structure
UN/ISDR, 2005	Community	The capacity of a system, community or society potentially exposed to hazards to adapt, by resisting or changing in order to reach and maintain an acceptable level of functioning and structure
Perrings, 2006	Community	The ability of the system to withstand either market or environmental shocks without losing the capacity to allocate resources efficiently
Liu, 2007	Community	The capability to retain similar structures and functioning after disturbances for continuous development
Norris, 2008	Community Individual	A process linking a set of adaptive capacities to a positive trajectory of functioning and adaptation after a disturbance
Rose, 2007	Economic	(Dynamic) Resilience: the speed at which an entity or system recovers from a severe shock to achieve a desired state Static economic resilience: the ability of an entity or system to maintain function (e.g., continue producing) when shocked Inherent resilience: the ability to deal with crises Adaptive resilience: the ability (of an entity or system) in crisis situations to maintain function on the basis of ingenuity or extra effort
Masten, 1990	Individual	The process of, capacity for, or outcome of successful adaptation despite challenging or threatening circumstances Individual

Egeland, 1993	Individual	The capacity for successful adaptation, positive functioning, or competence…despite high-risk status, chronic stress, or following prolonged or severe trauma
Butler, 2007	Individual	Good adaptation under extenuating circumstances; a recovery trajectory that returns to baseline functioning following a challenge

Another way to classify the definitions is by "Adaptation vs Resistance." Most of the definitions reflect the idea of adaptation to cope with adversity. The community adapts to adversity by changing how it functions, or by using resources in innovative ways. A converse view is that the community resists adversity (or expends resources) to avoid change, and its resilience is reflected by how much adversity it can withstand without collapsing or dramatically changing (e.g., Anderies and Ott).

A third way to classify the definitions is in terms of "Trajectory." Many of the ecologically-derived definitions (Resilience Alliance) are focused on whether or not the community changes in the face of adversity, and do not try to evaluate whether the change is an improvement or not. Pushed to the extreme, these definitions cluster around the black-and-white idea that if a community survives adversity it is resilient, if it does not it is not. On the other hand, most of the other definitions consider the trajectory of the community's response to adversity (e.g., Waller), i.e., *resilience* implies regaining functionality after a crisis.

The definitions can also be classified in terms of "Predictability." Some of the definitions lend themselves to comparisons among communities (e.g., Bruneau). In effect, this type of definition often can be used to predict how well a community will be able to regain functionality compared to others. Other definitions are not very useful for making predictions, either because they imply that *resilience* can only be perceived after the fact (Butler), or because of the subjective nature of the definition (Kimhi).

Finally, the definitions can also be compared in terms of what they imply about the temporal nature of *resilience*. Some of the definitions view *resilience* as an emergent property that appears only in the wake of a crisis (Butler). Others, primarily those that view *resilience* as a process of responding to adversity, also ascribe an after-the-crisis characteristic to it. These are in contrast to definitions that view *resilience* as an inherent and dynamic attribute of the community, that depends on the community's trajectory but can be independently enhanced through good

organization and planning (Rose, Centre for Community Enterprise). As described below, CARRI's definition is in the latter group.

USEFULNESS OF DEFINITIONS

It is difficult to select one from this plethora of definitions as "the best." Each has value and has led to positive contributions within its domain. Thus, the definition one chooses should reflect the way in which it will be used. The Community and Regional Resilience Institute (CARRI) is focused on enhancing the resilience of communities. CARRI's experience in its partner communities (Charleston, SC; Gulfport, MS; and Memphis, TN) and its extensive research lead to the conclusion that a definition useful for improving the ability of a community to regain functionality after a disaster ought to embody the following core concepts:

- *Resilience* is an inherent and dynamic attribute of the community. This means that it exists throughout the life of the community. Potentially it can either be determined absolutely, or at least changes in a community's resilience can be detected.
- Adaptability is at the core of this attribute. Adaptation can occur either in response to or in anticipation of a crisis.
- Any adaptation must improve the community, i.e., must result in a positive outcome (positive trajectory) for the community relative to its state after experiencing adversity. This can best be detected by considering the level of functionality of the community after a crisis.
- *Resilience* should be defined in a manner that enables useful predictions to be made about a community's ability to recover from adversity. This will enable communities to assess their resilience and take action to improve it if necessary.

Based on this, CARRI has developed the following definition for its use:

> *Community resilience is the capability to anticipate risk, limit impact, and bounce back rapidly through survival, adaptability, evolution, and growth in the face of turbulent change.*

This definition contains the core concepts identified above: resilience as an attribute, with adaptability at its core. It indicates the desired trajectory, and can enable communities to determine how resilient they are and to take actions to improve their resilience.

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