The background of the cover is a detailed architectural drawing in a light green color on a dark green background. It features various geometric shapes, lines, and patterns, including a large circular structure with a hexagonal grid, a curved walkway, and several rectangular buildings with internal details. The drawing is a technical or conceptual plan of a space.

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REGENERATIVE URBAN DEVELOPMENT, CLIMATE CHANGE AND THE COMMON GOOD

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11 Integrating social science and positive psychology into regenerative development and design processes

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Regenerative development is made possible by courageous groups of people willing to undergo individual and collective transformation to address local and global challenges. The key processes of regenerative development and regenerative design are largely social in nature and benefit from attention to and integration of a variety of social sciences (Gibbons et al. 2018; Robinson 2004; Robinson & Cole 2015). This chapter explores how insights from social science can inform place-based regenerative development and deepen our understanding to realize the regenerative potential in places (Table 11.1). A fundamental requirement of this work is that people constantly regenerate their thinking, comprehension, and connection to the health of living systems as a whole (Mang, Haggard & Regenesis 2016). Regenerative development is not a time-limited activity or event, but rather a dynamic and iterative process, which strengthens the collective ability to sense what is emergent, what is essential, and where potential exists, thereby enabling regenerative practitioners to evolve themselves, their communities, and all living systems—in the present moment and into the future.

While scholars and practitioners have debated the definition of the terms regenerative development, regenerative design, and regenerative sustainability, we chose the term *regenerative development* for several reasons. First, the term sustainability has long been tied to notions of doing less harm and the regenerative paradigm seeks to move beyond into a mental model that examines ways to develop multidimensional benefits (McDonough & Braungart 2010; Reed 2007). Thus, we depart from Robinson and Cole's (2015) view that regenerative sustainability is the more broadly participatory and constructivist concept. Second, where regenerative design may focus on design efforts like cradle to cradle product design or net positive buildings or urban districts, regenerative development, as it has been conceptualized most recently, includes a larger scope of projects from buildings to neighborhood design to comprehensive community development and environmental justice planning (Mang, Haggard & Regenesis 2016; Wahl 2016). The idea of regenerative development has been and continues to be debated and refined in both scholarly and practice-oriented writings. We will use the term “regenerative development” rather than “regenerative sustainability” because we see regenerative development as more clearly indicating a process that is participatory, evolving, and constructivist.

Table 11.1 Definition of key terms for regenerative development discourses

<i>Key terms</i>	<i>Definition</i>
Regenerate	To bring new and more vigorous life. Creating greater capacity for ongoing evolution, resulting in increased vitality and viability (Mang, Haggard & Regeneration 2016).
Regenerative development	The process of building capacity and capability in people, communities, and other natural systems to renew, evolve, and thrive (Center for Living Environments and Regeneration 2017).
Regenerative design	The art and process of planning and creating, based on a deep understanding of place (ecosystem, culture, etc.), using technologies and strategies that result in enduring capability for coevolution and increased vitality and viability (Center for Living Environments and Regeneration 2017).
Regenerative practice	The art and science of realizing regenerative potential in systems.

In this chapter, we explore how insights from social science can help guide regenerative practitioners in the practice of inviting, developing, and guiding networks toward their greatest potential. Regenerative development requires engaging and moving groups of people into higher orders of understanding, capability, and desire to think and act from a regenerative paradigm. We will explore how two unique domains of social science—positive psychology and social network science—can inform and elevate regenerative development projects. We will first discuss the core principles of regenerative development, and then define five core capabilities of regenerative practitioners. We will explore one of those capabilities—Developmental Facilitating—in depth. Of the five capabilities, Developmental Facilitating is most directly connected to social sciences, in that the capability is focused on working with groups and developing capacity through building relationships and capacity for collective thought. Facilitation is as much a science as an art; when the social sciences are integrated into regenerative development projects, they have the potential to radically transform the power of groups to conceive of new realities and take new action. We make two propositions: First, the principles of human thriving from positive psychology apply equally to the processes of interactions as they do to the outcomes or goals of a regenerative development process; second, regenerative practitioners who are experts in facilitation know how to develop networks and group capacity in ways that overcome many of the common dysfunctions of collective action networks.

Assumptions and key concepts of regenerative development

Drawing on the practice guides of leaders in regenerative work, we have identified six core principles of regenerative development—whole systems approach, being of service, human interdependence with nature, accounting for uniqueness, focus on potential, and intentional network weaving (Center for Living Environments

and Regeneration 2017; Gilchrist 2009; Mang, Haggard & Regenesys 2016; Sarkissian et al. 2009). Each of these principles reflects human and natural systems and directs and informs the work of regenerative practitioners. Further, they lay the groundwork for how practitioners can facilitate teams, groups, and communities toward regenerative outcomes.

The first core principle, *whole systems approach*, recognizes that people are embedded in places that constitute complex webs of interdependent ecological, social, material, and economic systems (Bortoft 1996; Liu et al. 2007; Sack 1997). In the past decade, social and natural scientists have been articulating the importance of understanding and modeling the complexities of coupled systems—social, ecological, economic, and technological (Ostrom 2009; Sanford 2017). This interconnectedness within and across systems requires a whole systems approach because the world works as systems of nested wholes, not as a collection of pieces and parts, where the systems are interdependent, have emergent impacts on each other, and produce both long- and short-term impacts on other systems (Liu et al. 2007; Ostrom 2009). Through seeing and working with wholes, practitioners come to understand the interconnections and relationships that are essential to effectively engaging people and organizations to realize the regenerative potential in places (Bortoft 1996; Seamon 2018). Regenerative business leader Carol Sanford (2016) described whole systems in her blog:

When a seed is dropped into healthy soil, it is nurtured by the whole soil system and the larger ecosystem within which the soil is nurtured. The seed grows into a mature plant, contributing food to the larger system and dropping more seeds into the soil. Looking at the plant in random moments or studying one or another of its phases cuts it into non-living parts. In the same way, looking at organs of the human body independently of their lives as whole beings nested within a human who is nested within a neighborhood within an ecosystem on a living planet is misapprehending them as static, partial objects and thus missing the full reality of their being. This narrow perception of living beings makes it almost impossible to grasp the complexity of living systems in ways that would enable us to make truly regenerative contributions to our communities and the larger wholes within which they are nested.

In recent decades, scholars have been articulating and advocating for a new scientific philosophy, which Dent (1999) called complexity science. This new paradigm is rooted in holism instead of reductionism, mutual causality versus linear causality, constructivism versus objective reality, understanding phenomena within their context rather than as objectively separate, and a focus on relationships between entities versus a focus on discrete entities (Bortoft 1996).

The second core principle, *being of service*, arises from the human need for meaning and to contribute to something larger than the self (Seligman 2012). Being of service has many facets, but at the core, this principle is about being part of something larger than oneself and contributing to the well-being of the

others (Center for Living Environments and Regeneration 2017). Seligman (2012) in his book, *Flourish: A Visionary New Understanding of Happiness and Well-Being*, defined meaning as “belonging to and serving something that you believe to be bigger than the self” (p. 17). Similarly, Grant (2013) has argued that giving to others elevates our own success. Grant defined giving as focusing on acting in the interests of others, such as by giving help, providing mentoring, sharing credit, or connecting others to needed resources (Grant 2013). Cross-cultural studies have found that the values associated with giving (helpfulness, responsibility, social justice, and compassion) are the predominant guiding principle across dozens of countries (Grant 2013; Schwartz & Bardi 2001). Being of service is a core principle of regenerative processes not simply because people desire meaning, but also because people are more motivated to act when their work has a deeper meaning and contributes to the welfare of others (Buchanan & Kern 2017).

The third core principle is about *human interdependence with nature*. People are embedded in, and dependent upon natural systems, yet we often create cultural values and world views that deny or ignore this interdependency (Wahl 2016; Whyte, Brewer & Johnson 2016). The dominant cultural paradigm of the 20th century in the United States, and arguably in the developed world, was decidedly anthropocentric, viewing nature as existing for the benefit of human beings, and also purporting that humans are uniquely exempt from the constraints of nature, in contrast to other species (Dunlap & Catton 1994; Sauv e, Bernard & Sloan 2016; Wahl 2016). In recent decades, a contrasting worldview, one that conceptualizes human beings and the well-being of human society as interdependent with nature and environmental conservation, has been growing in the United States and other developed countries (Corral-Verdugo et al. 2008; Dunlap et al. 2000; Sale 1985). By recognizing and appreciating our interdependent relationship with natural systems, we have the opportunity to explore and realize how humans can be positive contributors in natural systems (Center for Living Environments and Regeneration 2017). This journey begins with learning from and understanding the nature of natural systems, and then exploring how we can emulate and enhance nature’s processes.

The key principle of *accounting for uniqueness* is related to the local context in which people are embedded. Every culture, place, organization, and community has its own unique history, qualities, and patterns (Sack 1997; Seamon 2018). Anthropologists, cultural geographers, psychologists, and sociologists have long argued for solutions that are not only culturally informed, but are inspired by local wisdom and practices (Agrawal 1995; Barca, McCann & Rodr guez-Pose 2012; Barth et al. 2007; Briggs 2005). A recent effort in Wales found that listening to local citizens and developing messages that reflect local and place-based knowledge and identities were the most effective tools for engaging and encouraging action related to climate change (Marshall 2014). In addition, several fields operate on the recognition that people and their experiences and the meanings they make of those experiences are embedded in a social context (Lin, Cook & Burt 2001; Seligman & Csikszentmihalyi 2000). Not only do local communities have unique knowledge, cultural understandings, and mental frameworks, but

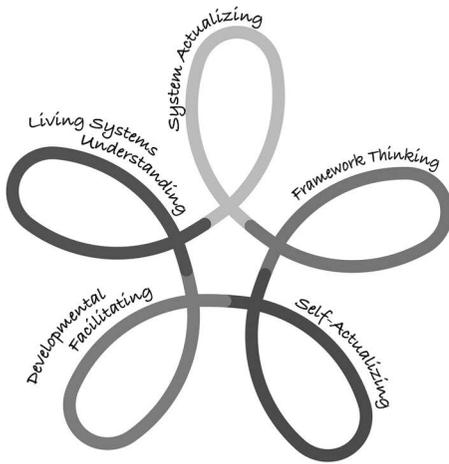
engaging people in sharing that knowledge and understanding is a key step in activating authentic, inspired change across natural, social, and economic systems (Mang, Haggard & Regenesys 2016; Sarkissian et al. 2009; Seamon 2018).

Implicit in accounting for uniqueness is the ability to focus on unique potential. The fifth principle is *shifting focus from problems to potential*. Just as each child has a unique potential, so does each place, each project, and each organization. Regenerative development involves shifting our focus from solving problems to focusing on realizing potential. While problem-solving plays a useful role in certain situations, focusing on potential opens up projects and endeavors to a whole world of possibility, and more importantly, relevancy. Across the social sciences, from education to social work and from health care to business management, practitioners have been adopting a strengths-based approach (Kana 'iaupuni 2005; Lopez & Louis 2009; Metcalf & Benn 2013; Whitney & Cooperrider 2011). The strengths-based approach, a philosophy evolving out of social work practice, values the knowledge, skills, capacity, connections, and potential already apparent in individuals, groups, and communities. Realizing potential is accomplished through the integration of the needs and opportunities in the local context and the greater system with the strengths of individuals, groups, and places. The regenerative practitioner works with communities to envision a new future reality and focuses activity toward the desired future (Center for Living Environments and Regeneration 2017).

The final principle is *intentional network weaving*. Not only are human beings embedded in place, but they are also embedded in networks, or patterns of relationships among people. These networks and the patterning of ties, from trust to sharing knowledge to sharing resources, are the key to making significant and lasting change (Gilchrist 2009; Henry & Vollan 2014; Krebs & Holley 2005). It is not the number of people engaged in a change effort that matters, but building the connections that help people develop understanding, access knowledge and resources, and expand their influence (Wenger 2000; Wheatley & Frieze 2006). Intentional network weaving requires some basic understanding of network structures, the ability to map and track the local network, and a capability for building the kinds of ties that will help develop the network into patterns that best facilitate knowledge sharing and resource exchange, called network weaving (Frank 2011; Krebs & Holley 2005). Network weaving, a term that comes out of community development literature, is building a community of practice, where members are committed to not just the needs of the group, but to advancing the practice of regenerative development and sharing their experience and knowledge with a wider audience, thus connecting back to being of service.

Capacities & capabilities of the regenerative practitioner

Operating with the six principles described above as a foundation for action, the regenerative practitioner must also develop a variety of capacities and capabilities to engage in regenerative work. As described in *Becoming a Regenerative Practitioner: A Field Guide* (Plaut & Amedée 2018), regenerative development requires the development of five core capabilities—system actualizing, framework



Products of the Five Core Capabilities

System Actualizing – the capacity and capability of a practitioner to engage people in ongoing learning and development, leading to continuing evolution and realization of potential.

Framework Thinking – clear thinking that results in deliberate, effective action, and heightened intelligence for working with whole systems.

Self-Actualizing – personal agency and effectiveness for serving as an agent for developing potential in individuals, teams, and other living systems.

Developmental Facilitating – new thoughts, deeper will, and informed actions that are co-created by the group; increasing levels of capability with the team or community over time.

Living Systems Understanding – actions that align with and support living systems in a reciprocal and mutually beneficial way.

Figure 11.1 Regenerative practitioner framework

thinking, self-actualizing, developmental facilitating, and living systems understanding (see Figure 11.1). “The five capabilities are not buckets of knowledge or disciplines to be studied. Instead, they are a set of capacities and capabilities that are developed over time and used dynamically, in real time application” (Plaut & Amedée 2018, p. 5). The ultimate aim for all those engaged in regenerative development is to become a systems actualizer, to awaken “*the regenerative capability embodied in all living systems to create increasing levels of vitality, viability, and capacity to evolve the systems of which they are a part*” (Plaut & Amedée 2018, p. 10).

The products of the five core capabilities are as follows:

System actualizing: It is the capacity and capability of a practitioner to engage people in ongoing learning and development, leading to continuing evolution and realization of potential.

Framework thinking: It is clear thinking that results in deliberate, effective action, and heightened intelligence for working with whole systems.

Self-actualizing: It is personal agency and effectiveness for serving as an agent for developing potential in individuals, teams, and other living systems.

Developmental facilitating: This core capability has new thoughts, deeper will, and informed actions that are cocreated by the group; increasing levels of capability with the team or community over time.

Living systems understanding: This core capability has actions that align with and support living systems in a reciprocal and mutually beneficial way.

In the remainder of the chapter, we use this framework as an outline to explore how knowledge from various social science disciplines and fields of practice can inform and deepen the understanding of regenerative development. Because Developmental Facilitating focuses on effective group processes and on elevating the collective capacity and capability of groups, the remainder of this chapter will explore how social science informs the practice of Developmental Facilitating, more specifically, we ask the following questions:

- 1 How can positive psychology and the theory of human thriving inform the way regenerative practitioners work with groups?
 - a How can the group processes best be facilitated to help realize potential in regenerative development projects?
 - b How do regenerative practitioners engage people in what might be a long and arduous process and how do they keep people engaged?
- 2 What strategies are used to build robust and productive networks that enable collective action and avoid the pitfalls that block collective action?

Elevating regenerative development through a focus on human thriving

Working on complex systems and creating systems change can be exhausting and daunting. The ultimate aim of Developmental Facilitating is to design and deliver group activities and process that build capacity toward systems actualizing. As Innes and Booher (1999) argued, “processes and outcomes cannot be neatly separated in consensus building because the process matters in and of itself, and because the process and outcome are likely to be tied together” (p. 415). Regenerative development work requires substantive individual and collective growth, therefore, the process of regenerative development must embody the elements of human thriving in order to guide projects that cultivate the capacity to renew, evolve, and thrive. The questions are as follows: How can the group processes of interaction best be facilitated to help realize potential? How do regenerative practitioners engage people in what might be a long and arduous process and how do they keep people engaged?

Positive psychology as a field of study aims to discover and promote the factors that allow individuals and communities to thrive (Seligman & Csikszentmihalyi 2000). Seligman (2012) developed the theory of human well-being comprising five fundamental elements: positive emotion, engagement, meaning, positive relationships, and accomplishment (PERMA). Each of these five elements contributes to well-being, is pursued for its own sake, and is defined and measured separately from the other elements (Seligman 2012). The field of positive psychology presumes that working toward well-being is possible because human beings are assumed to be self-organizing, self-directive, and adaptive entities (Seligman & Csikszentmihalyi 2000). Seligman and Csikszentmihalyi (2000) argued that in order to cultivate well-being, we must

look for, address, and cultivate not just opportunities for individuals, but also attend to the creation of positive institutions and communities. This is the work of regenerative development, cultivating groups, institutions, and communities that are expanding their capacity to support the components of human thriving. Understanding the components of human thriving and incorporating them into regenerative development projects sets the foundation for teams and communities to do challenging work.

While most who study regenerative development or sustainable development projects may not have studied positive psychology, ample evidence from a variety of empirical studies illustrates that the most successful processes are incorporating the five aspects of human thriving: (1) they cultivate *positive emotions* within their activities, (2) foster deep *engagement* throughout the process, (3) build *positive relationships* between individuals and groups, (4) generate a sense of *meaning* for all stakeholders, and (5) promote and celebrate *accomplishment* throughout the process.

Positive emotion: Positive emotion encompasses all the usual subjective well-being measures: pleasure, ecstasy, comfort, warmth, and the like. Studies of team effectiveness and creativity have found that positive emotions, having fun, are associated with greater creativity and problem-solving skill (Estrada, Isen & Young 1994, 2001; Isen, Daubman & Nowicki 1987). In our own study of integrative design teams, we found that those teams that cultivated positive emotions or affect were also described by participants as more creative and successful teams (Cross et al. 2015). When interviewing design teams about their most successful projects and team experiences, one of the first things they comment about is the emotional experience of being on the team. For the most successful teams, participants typically described how fun and creative the process was, how they felt their views were really being listened to, and that they could see specific design choices that came out of group charrettes. In contrast, the teams that designed good, but not great buildings, often made comments that included less positive emotions such as frustration, uncertainty about what happened with information they shared, or lack of emotional safety to share ideas (Cross et al. 2015). The benefits of positive affect do more than boost creativity; they also support other aspects of well-being like increased social interaction, help, generosity, and interpersonal understanding (Isen 2001).

Engagement: Positive psychologists talk about engagement as being in a state of flow, where a person is so engrossed in the present moment and activity that one loses a sense of self and the passage of time (Nakamura & Csikszentmihalyi 2014; Seligman 2012). The flow experience has been found to be associated with all manner of individual human performance from the success of athletes to musical virtuosos; however, only recently has it been examined in team environments (Aubé, Brunelle & Rousseau 2014; Csikszentmihalyi 2014; Lazarovitz 2004). In group processes, cultivating both individual states of flow and team flow can improve team performance. The best team processes give people the opportunity for challenge, deep focus, and collective engagement.

Positive relationships: In group environments and team activities, the quality and effectiveness of teams are influenced by the quality of social relationships on the team. Social trust and positive relationships increase willingness to share information that thus improves team performance (Lee et al. 2010; Wenger 2000). Cross et al. (2015) found that on sustainable design teams, relationship and trust building were consistently described as necessary for information sharing and strong communication loops, which directly impact team creativity, problem-solving, and ultimate performance. In regenerative development projects the cultivation of positive relationships between individuals and groups is both the practice and one of the key objectives.

Meaning: Being a part of something larger than oneself is one of the key components of human well-being, and it has been articulated as the core principle “being of service.” Interestingly, giving is associated with greater individual success, higher productivity and salaries, and stronger team outcomes (Grant 2013). In team environments, when teams feel that their work is contributing to a group beyond themselves (society or the company more generally), they are more successful (Bock 2015). Sustainable development teams found motivation to work harder and longer when they knew that their efforts was having a lasting impact (Meyer et al. 2013). Crafting a vision of regenerative work that connects people to something larger than themselves is an essential component of regenerative development projects because the work is hard and the connection to something larger than oneself helps groups maintain motivation in the face of challenges.

Accomplishment: The final component of well-being is accomplishment, the pursuit of achievement, learning, and mastery (Seligman 2012). Just as the positive psychologists have noted, these components of well-being apply equally to individuals, institutions, and communities. Sarkissian et al. (2009) argued that the success of sustainable development efforts hinge on several factors, the development of trust (positive relationships), and accomplishment. When groups are brought together but are not able to take action or develop a sense of accomplishment, they feel that their energy and effort has been wasted (Sarkissian et al. 2009). In the regenerative development process, accomplishment is necessary because without it people lose the willingness to engage in difficult work.

The scientific literature on team performance, creativity in teams, and successful community development has significant overlap with the five components of Seligman’s theory of human thriving. Given the synergy with research on teams, the theory of human thriving offers a useful framework for understanding the successful markers of any collaborative process. The degree to which any regenerative development project cultivates and embodies these five elements will directly impact the success of the project.

Cultivating and developing self-evolving networks

The product of Developmental Facilitating is the creation of new thoughts, deeper will, and informed actions that are cocreated by the group, characterized by increasing levels of capability with the team or community over time. How is

it possible to realize this potential? Scientists from such diverse fields as systems engineering, natural resource management, and community development have all recognized the importance of one primary strategy in evolving complex systems—using the properties of social networks to advance change, find creative unifying solutions, enable collective action, and anchor change into social habits and institutions (Frank 2011; Krebs & Holley 2005; (Liu & Barabási 2016); Varda, Shoup & Miller 2012).

Networks as framework thinking

Social network analysis (SNA) is a unique tool because it measures and maps the characteristics of social actors (individuals and groups) as well as the quality, frequency, or strength of many types of relational ties and resource exchanges. When tracking a network over time, a regenerative practitioner might examine how trust is expanding in the network or how new clusters of groups have formed strong bonds. SNA provides a powerful framework for understanding how knowledge, information, and other resources are moving through the group. Using network maps to track group development can be a tool to help regenerative development projects self-assess and then adapt more productive patterns of working together.

Network structures

What do regenerative practitioners need to know about social networks in order to create a process that maximizes the potential of the network to do regenerative development work? Networks of people, like those of other living systems, have a variety of universal patterns and traits. Networks are made up of nodes (actors or social agents) that can be individuals, groups, or organizations, and the links or relational ties between them (e.g., trust, kinship, exchange). Regardless of the type of network—financial, biological, electronic, or social—nodes are linked to each other in patterned ways, called a network structure. These patterns or network structures have unique properties; some structures are more efficient at passing information through the network, while others are more resilient to change. Krebs and Holley (2005) argued that “instead of allowing networks to evolve without direction, successful individuals, groups and organizations have found that it pays to actively manage your network” (p. 4).

In place-based, sustainable development work, several idealized types of network structures have been identified that are associated with different levels of capacity to organize, share knowledge, and mobilize action (Bodin 2017; Henry & Vollan 2014; Krebs & Holley 2005; Vance-Borland & Holley 2011). Krebs and Holley (2005) described four stages of community collaboration structures as they develop over time (Figure 11.2). When a community network diagram consists of separated, isolated components, called “scattered fragments,” it indicates that some community stakeholders have begun working together in small groups but have not yet become a single network. Without a fully connected structure, the

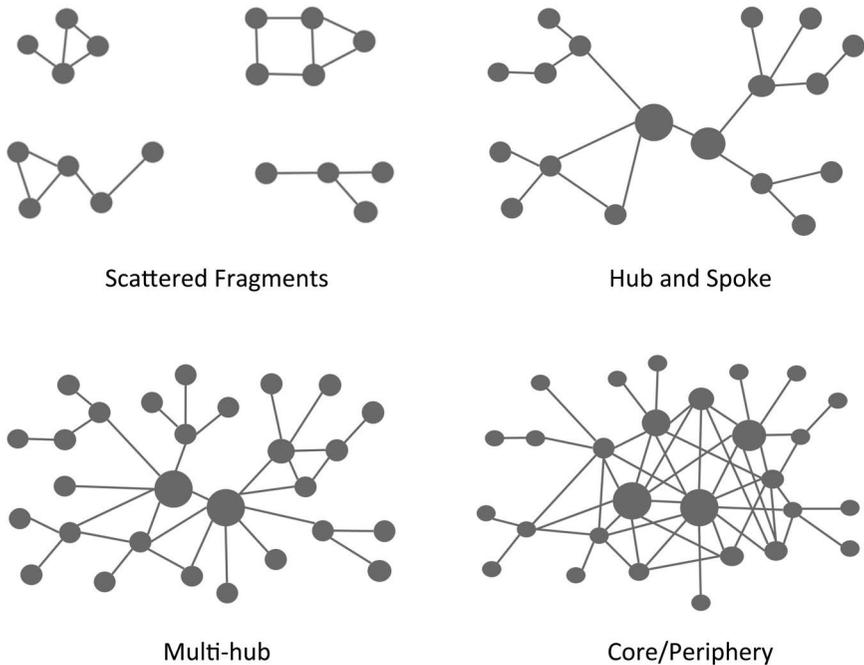


Figure 11.2 Social network structures (Krebs & Holley 2005)

capacity for joint action is severely limited. The Hub and Spoke, or centralized network, indicates that a single actor, often a key community agency, has been acting as the leader or coordinator of community action (Krebs & Holley 2005). This structure is very common at the beginning of a new community development efforts, but does not yet have the variety or density of ties required to really take collective action (Cross et al. 2009; Krebs & Holley 2005). As community stakeholders begin to work together, more ties form in the network, some new hubs and spokes appear as new members join the network, and existing hubs build ties and begin to look more like a web (Cross et al. 2009; Krebs & Holley 2005).

Managing complex problems requires the development of a core/periphery network structure (Cross et al. 2015; Sandström & Rova 2010; Vance-Borland & Holley 2011). This structure has several key features. First, the ties form a web-like or distributed network in the middle, which integrates members with unique knowledge or resources (Henry & Vollan 2014; Vance-Borland & Holley 2011). Second, the core comprises many ties and strong ties in the middle that help to facilitate knowledge and resource flow across the network (Cross et al. 2015; Krebs & Holley 2005). The diversity of the weak ties on the periphery bring in new knowledge and ideas into the network and helps to increase the capacity for creativity and problem-solving (Anklam 2007; Cross et al. 2015; Henry & Vollan 2014). While the structure of collaboration networks impacts the potential of the network to engage in collective action, the dynamics of network formation

are recursive. The choices of individuals to form ties influence the structure and the structure then exerts influence on the quality of ties and new tie formation or dissolution. The changing ties and evolving structure of the network alter the capacity of the network to realize its goals or potential.

Building networks that realize potential

Network structures have the potential to either facilitate knowledge sharing, creativity, innovation, and collective action or to thwart them. Is it possible to create self-evolving networks that continually grow their ability to evolve, build capacity, and act collectively to actualize the potential of the system? The scientific evidence suggests that it is possible, but only through intentional network facilitation and the creation of flexible adaptive networks (Bryson, Crosby & Stone 2015; Vance-Borland & Holley 2011). Collaborative groups—policy networks, design teams, and collaborative resource management coalitions—often work off an intuitive understanding of network principles or dynamics. In the last 10–20 years, network science has been increasingly used as a tool for public health, policy networks, and natural resource governance (Cohen, Evans & Mills 2012; Provan et al. 2005; Varda, Shoup & Miller 2011). However, researchers continue to call for the need of professional facilitators, funded by the project to attend to the formation and evolution of relationships and network structures required for regenerative projects (Bryson, Crosby & Stone 2015; Vance-Borland & Holley 2011).

Developmental Facilitating as a capacity requires depth of knowledge in the processes of network formation and the structures that support collective action between a diverse set of actors. It also necessitates depth of knowledge in group activities and processes that have the capacity to evolve positive relationship, systems thinking, and capacity for coordinated action. Networks that form without mindful direction and intervention are more likely to not develop beyond the fragmented state (Figure 11.2), more likely to form structures that are segregated and scale-free and low density, and therefore less likely to succeed in their goals (Bryson, Crosby & Stone 2015; Henry & Vollan 2014). When collaborative networks are mindfully formed and facilitated, they can be shaped in ways that are conducive to resource sharing, collaborative decision-making, or creative thought (Briggs 2005; Bryson, Crosby & Stone 2015; Henry & Vollan 2014).

Regenerative practitioners use a variety of professional facilitation practices that have the potential to cultivate the social relationships and network structures needed for regenerative development and avoid the pathologies that create dysfunctional networks.

Table 11.2 provides an overview of the common professional facilitation practices used in many settings from community development, to adaptive natural resource management, to integrative design (7group & Reed 2009; Butler 2014; Kaner 2014). Paired with each facilitation practice is a short description of how that practice influences the formation of ties, the quality of relationships in the network, and in turn how those relationships help to avoid specific network

Table 11.2 Facilitation practices to evolve a network

<i>Facilitation practice</i>	<i>Influence on nodes, ties, and network structure</i>	<i>Network pathology avoided</i>	<i>Network capacity created</i>
Intentional invitations of diverse stakeholders (Bodin 2017; Vance-Borland & Holley 2011)	Brings diverse membership into the core and periphery, cultivates cross-scale ties, encourages pairwise ties with diverse others	Homophily, segregation, isolates	Group capacity to see and work with the whole system, coordination, group learning
Network weaving: Monitoring the network and suggesting new or strategic ties, and maintaining participation over time (Provan & Milward 2001; Sandström & Rova 2010; Vance-Borland & Holley 2011)	Increases periphery members, builds cross-scale ties, bridges fragmented groups	Segregation, constrained knowledge flow, absence of key roles—like a champion, fragmentation between groups, nodes seeking a position of power or brokerage	New knowledge enhances creativity, adaptive capacity, resource exchange, continuity prevents ideas from getting dropped or forgotten
Group visioning (Hoxie, Berkebile & Todd 2012)	Develops a sense of shared purpose and group identity	Fragmentation, biases assimilation, nodal traits—lack of openness to learning	Capacity for collective action, cooperation, shared mental models
Setting ground rules: Creating norms for even participation, respectful consideration of diverse views, and decision-making based on group vision (Bryson, Crosby & Stone 2015; Cross et al. 2015)	Increases ties across the network, increases trust, increases even participation, reduces opportunities for positions of brokerage, requires participants to consider diverse perspectives	Biased assimilation, uneven participation, segregation, fragmentation, lack of density	Team learning, capacity for collective decision-making, clarity of decision-making for achieving group vision, shared norms improve capacity for collaborative governance
Activities to build social connections (shared meals, fun, social events; Ostrom 1998; Vangen & Huxham 2003)	Increases density of trust ties, cultivates bonding ties in the core, increases reciprocal ties	Selective attachment for individual gain, homophily, segregation	Cooperation, information flow across the network, adaptive capacity

Defined process for facilitating large coalition meetings (Ansell & Gash 2008)	Builds distributed network, increases reciprocal ties, enhances knowledge flow across diverse nodes	Relatively few players control information flow and resources, scale-free networks, high transaction costs for knowledge sharing	Individual learning, team learning and shared mental models, capacity for collective action
Small group work (Cross et al. 2015; Ostrom 1998)	Builds trust, encourages interconnectedness (triadic closure), increases density in the core, increases strength of ties, supports knowledge sharing	Constrained knowledge flow, lower levels of cooperation with diverse others, fragmentation	Individual learning, team learning, capacity for coordinated action
Guided thinking and deliberation: Expert facilitation of divergent, then convergent thinking (Bryson, Crosby & Stone 2015; Kaner 2014)	Increases knowledge sharing across diverse nodes, decreases transaction costs for sharing tacit knowledge and complex knowledge	Limited interactions and knowledge sharing opportunities, ineffective brainstorming, truncated exploration of solutions, using old mental models	Capacity for integrative and creative thinking, discovery of intervention points with the greatest leverage, capacity to see and work with whole system
Clear role definition and flexibility to change roles as conditions change (social, ecological, and political) (Bryson, Crosby & Stone 2006; Innes & Booher 1999; Ostrom 1998) Shares and discusses network diagrams (Bodin 2017; Sandström & Rova 2010; Vance-Borland & Holley 2011)	Improves trust, supports mindful creation of the most appropriate network structure, reveals missing relationships and nodes in the network Increases group knowledge about effective network structures	Individuals seek to maximize position of power in network, incentives for people to occupy strategic positions, collaborative overload Fragmentation, individuals seek to maximize position of power in network, incentives for people to occupy strategic positions	Cooperation, capacity to develop and adopt innovative solutions, capacity to manage rather than avoid risk, capacity to evolve the network Capacity to evolve the network, adaptive management capacity, shared mental models

pathologies. The fourth column of the table describes how capacities are created in the network through the combination of network structures and quality of relationships. Regenerative practitioners are attending to three primary dynamics that recursively shape the network and its potential: (1) cultivating membership and participation, including diverse stakeholders, and attending to participation over the life span of the project; (2) building social relationships, trust, and group identity; and (3) using a social network framework to track the progress, development, and challenges of the group over time.

Network membership and forming ties

Professional facilitators can prevent many of the dysfunctions of network self-assembly by inviting diverse stakeholders, encouraging interaction between people with diverse knowledge and viewpoints, and ensuring engagement of diverse members across the life span of the project. This attention to network membership and involvement helps to mitigate against the tendencies for individual actors to form and cut ties based on similarity (homophily), to segregate into cliques or clusters with homogenous world views (segregation), and to seek positions of brokerage between subgroups (Henry & Volla 2014; Vance-Borland & Holley 2011).

Regenerative practitioners prevent homophily and segregation from dominating the network through several activities. Beginning with the intention to invite and mindfully include diverse stakeholders, regenerative practitioners ensure that the process is inclusive of all those whose livelihoods will be impacted by a particular regenerative project. The regenerative practitioner is continually confirming that the project has the necessary sponsors, champions, and facilitators, and that no key roles or groups of stakeholders are missing from the process (Bryson et al. 2015). Finally, the regenerative practitioner is analyzing the structure and membership of the network over time to ensure that key stakeholders are participating throughout the process and have not got marginalized into an isolated subgroup (Cross et al. 2015; Vance-Borland & Holley 2011). Attending to membership, roles, and opportunities for participation are primarily strategies for avoiding segregation, homophily, and fragmentation in the network that reduce opportunities for group learning, cooperation, and knowledge sharing (Phelps, Heidl & Wadhwa 2012).

Cultivating trust and group identity

Diverse membership alone is not enough to enable collaborative groups to realize their potential. They must also share a group vision, develop group norms, and expand levels of trust. Regenerative practitioners accomplish these tasks through several activities. At the beginning of regenerative processes, and periodically throughout, professional facilitators establish ground rules and group norms. Depending on the nature of the collaborative group, sometimes these ground rules are specific to a design charrette or workshop, sometimes they govern an

ongoing design process that might last for years (Cross et al. 2015). Ground rules might be formal agreements that include definition of roles, expected resource contributions, and sanctions for violating any part of the agreement (Innes & Booher 1999; Ostrom 1998; Sandström & Rova 2010). Setting expectations for interactions is a key strategy for building trust in collaborative groups.

The second key activity that is used to build trust, which improves the capacity of actors to cooperate and the capacity of the network to take coordinated action, is facilitation of social activities. One architect working on an innovative, high-performance building, said this, “Holding full-day charrettes and eating meals together makes it a social time to come together, where we get to talk to different people and share ideas. Those relationships built during the charrette make it possible for a facilities guy to walk up to the architect and say, ‘that is a really dumb idea.’” (Cross et al. 2015, p. 15). This architect described clearly how social events and charrettes build trust and help to integrate the network, creating bridging ties from groups that might typically be isolated in a design network.

The third key activity used by regenerative practitioners and professional facilitators is the guiding of group visioning sessions. These sessions typically explore a variety of topics from the uniqueness of place, to core values of place, to vision and goals (Hoxie, Berkebile & Todd 2012). Facilitated vision sessions improve creativity in groups and can expand what participants see as possible (Vidal & Valqui 2004). The integration of local values and community participation in vision creation, increases the commitment of individuals to the group goal, cooperation, and capacity for collective action (Hoxie, Berkebile & Todd 2012; Innes & Booher 1999; Marshall 2014). Cultivating social relationships while developing a group vision builds trust and expands ties, which improve cooperation and reduce segregation and fragmentation across the network.

Network evolving activities

The last five activities in [Table 11.2](#) work synergistically to evolve the network over time, integrating diverse nodes, and building capacity for knowledge sharing and collective action in the network. Both large and small group meetings create opportunities for building relationships, sharing knowledge, and creating bridging ties across diverse participants (Cross et al. 2015; Sandström & Rova 2010). Regenerative practitioners use a variety of theoretically based deliberative processes (e.g., divergent and convergent thinking, design thinking) to specifically facilitate knowledge sharing across diverse nodes, develop new mental models, and cultivate conditions that increase opportunities for creative and innovative solutions to emerge (Kaner 2014; Vidal & Valqui 2004). Activities that foster collaborative learning become a positive feedback loop in networks; as actors develop shared mental models, their trust in diverse others increases, and as trust increases the ability to share knowledge also increases (Bodin 2017; Ostrom 1998).

Because of the many barriers—nodal qualities, network structure, nature of the knowledge, trust—to sharing knowledge in a diverse network, creating

opportunities for group learning and knowledge exchanges are a primary and essential competency of Developmental Facilitating (Bodin 2017; Henry & Vollan 2014; Phelps, Heidl & Wadhwa 2012). Regenerative practitioners improve the outcomes of collaborative networks by attending to the dynamic needs of the network, opportunities to bridge fragmented subgroups, and emergent needs of the network members (Bryson et al. 2015; Hoxie, Berkebile & Todd 2012). The dynamic nature of living systems and social networks require that regenerative practitioners understand the evolving nature of relationships and networks in order to facilitated their evolution to encompass new capacities (Vance-Borland & Holley 2011; Wheatley & Frieze 2006).

Conclusion

Shifting mindsets, paradigms and ways of working is hard work. Those interested in leading regenerative development benefit from understanding two key learnings from social science. First, positive psychology deepens our understanding of the conditions and experiences that cultivate human thriving. Other regenerative practitioners have proposed that “a design process that stimulates regenerative capacity must follow the same rules as the system it seeks to create.” Therefore, a regenerative development process that seeks to build opportunities for human thriving must embody those principles throughout the process. Second, decades of research in policy, public health, ecology, and organizational studies have been building the evidence base for understanding how networks (traits of nodes, relationships between nodes, and structures of the whole network) shape the capacity of groups to learn, evolve, and develop capacity for collective action. Yet, there remain a number of gaps in our understanding of how best to engage network science in regenerative development projects.

Current models of regenerative development share a few common propositions: (1) regenerative development requires a process focused on engagement over pre-determined goals, (2) the process itself must mirror the dynamics of the system it is trying to generate, (3) participatory processes create the collaborative learning required for creative innovative solutions to emerge, and (4) intentional formation of relationships and network structures is required to evolve collaborative networks (Gibbons et al. 2018; Hoxie, Berkebile & Todd 2012; Mang, Haggard & Regenes 2016; Plaut & Amedée 2018; Robinson & Cole 2015; Vance-Borland & Holley 2011). These propositions form the foundation for both the practice and study of regenerative development.

Researchers and practitioners both have noted a gap between regenerative development practice and the evidence base. Third-party facilitation has been shown to increase the creativity of teams, improve outcomes of group processes, and evolve the capacity of collaborative groups, yet paid positions for “developmental facilitators” or “network weavers” are not standard practice (Bryson et al. 2015; Cross et al. 2015; Vance-Borland & Holley 2011). The dynamic nature of networks and complexity of the problems facing regenerative practitioners poses challenges for understanding all the causal relationships

between network formation, network relationships, network structure, and outcomes (Bryson et al. 2015; Henry & Vollan 2014; Sandström & Rova 2010). The multidisciplinary nature of network science and collaboration networks means that the application of network science to regenerative development is in its nascence. As the field of regenerative development grows, its greatest potential will evolve from the collaboration of scientists and practitioners examining both the practice and science of regenerative processes and how networks evolve within those processes.

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