20. Theories and concepts influencing sustainable community development: introducing the concept of community productivity
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INTRODUCTION

A sustainable future requires twinning improvements in quality of life with decreased consumption of materials and non-renewable resources. How can we chart our way conceptually and operationally in this unfamiliar territory? In the first section of this chapter, we briefly trace the history of sustainable development (SD) and sustainable community development (SCD) theory and practice, and demonstrate their interdisciplinary nature and influences by notable theories and concepts in fields such as ecology, economics and other social and natural sciences. In the second section, we present community productivity as an emerging theory of SCD and we argue that achieving SCD is possible through increased multi-factor productivity in the community. We explore how enhancing multiple forms of community capital can contribute to community productivity and well-being, and provide examples of community productivity metrics and current initiatives from around the world.

DEVELOPING A SUSTAINABLE COMMUNITY

SD emerged as a field of study after the 1987 Brundtland Commission report showed the interconnectedness between human activities and increasing environmental degradation: 26 percent of the world's population living in developed countries consumed 80–86 percent of non-renewable resources and 34–53 percent of food products (WCED, 1987). The Brundtland Report first popularized the term, stating that SD is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987, p. 41).

SD has been criticized as ambiguous and open to contradictory interpretations (Roseland and Spiliotopoulou, 2016), but most definitions present common characteristics: integration of environmental, economic and social aspects; systems thinking; and dynamic nature (Berke and Conroy, 2000). SD has represented a new way of thinking about economic development: "doing development differently" (Roseland, 2012, p. 3). This holistic view of sustainability is reflected in the new UN development agenda, aiming to tackle poverty, climate change and inequality in developed and developing countries (United Nations, 2015b), in the 2015 UN (Paris) Climate Change agreement (United Nations, 2015a), and in the UN New Urban Agenda (United Nations, 2017).

Importance of Communities and Urban Areas

Our research focus is sustainability at the community level, particularly in urban areas, where key components of both challenges and solutions are increasingly recognized (Roseland and Spiliotopoulou, 2016). For our research purposes, a community refers to "a group of people bound by geography and with a shared destiny, such as a municipality or a town" (Roseland, 2012, p. 12), and is considered as a complex, adaptive and interconnected system, requiring interdisciplinary study (Uphoff, 2014). An urban area is "a human settlement characterized – ecologically, economically, politically and culturally – by a significant infrastructural base; a high density of population, whether it be as denizens, working people, or transitory visitors; and what is perceived to be a large proportion of constructed surface area relative to the rest of the region"(James, 2015).

The UN Global Agenda for 2030 includes a goal for "inclusive, safe, resilient, and sustainable" cities, since they occupy 3–4 percent of the world's land surface, use 80 percent of resources, discharge most global waste (Girardet, 2015) and will be host to two-thirds of the world's population by 2050 (UN DESA, 2018). Urban areas are increasingly vulnerable to climate change and health challenges, and are linked to increased costs to the economy and the environment (Kanuri et al., 2016). The growing awareness that achieving sustainability requires societal change through collaborative decision-making and community engagement has brought SCD to the foreground (Clarke, 2012; Hermans et al., 2011). SCD is a holistic approach that integrates social, environmental and economic considerations into the dynamic processes and actions of communities on their path toward sustainability, while providing for current and future generations (Berke and Conroy, 2000; Roseland, 2012).

Theories and Concepts Influencing Sustainable Community Development

SCD, along with SD, has been influenced by a number of theories and has matured over the last few decades in academic, professional and popular discourse. Early work was carried out within a weak sustainability framework based on the assumptions that: humans should dominate over nature, natural resources are super-abundant and economic growth can continue indefinitely through resource efficiencies (Ayres, 2007; Solow, 1993; Williams and Millington, 2004).

Within this framework, SCD policies and initiatives have also been informed by ecological modernization and resource efficiency or eco-efficiency theories, aiming to create more efficient production processes and designs (Roseland and Spiliotopoulou, 2016). However, weak sustainability has been criticized for not incorporating important issues such as social equality, environmental justice, population trends and inter- and intra-generational equity (Agyeman et al., 2002; Bayulken and Huisingh, 2015).

In the recent years, SD and SCD have been gradually moving away from the uncertainties and debates involved in the weak sustainability viewpoint (Williams and Millington, 2004) toward a stronger sustainability model which acknowledges both the finite character of natural resources and the Earth's regenerative limits (Daly, 2005; Rockström et al., 2009), and also the need for socio-ecological and economic resilience "across temporal and spatial scales" (Meerow et al., 2016).

Community Economic Development (CED), Eco-localism, and Social Economy (SE) initiatives emerged as a community response to the negative impacts of weak sustainability and they evolved rapidly, from simple forms of local economic activity reflecting social or cultural values to ventures addressing broader social needs and environmental well-being (Gismondi et al., 2016; Hernandez, 2015). Under a strong sustainability model, social and ecological considerations are included in community analysis and policy-making through collaborative and systemic processes.

Weaknesses in Current Approaches on Sustainable Community Development

Despite the conceptual evolution of sustainability over the last decades, policies and initiatives have not always involved a balanced approach between environmental, economic and social concerns. The multitude of definitions and the lack of shared language or understanding of SD and SCD have contributed to limited and inconsistent application of sustainability principles through a variety of local agendas grounded in diverse theoretical backgrounds and frequently reflecting specific stakeholders' interests (Joss et al., 2015; Kristensen and Roseland, 2012; Roseland and Spiliotopoulou, 2017). Meanwhile, SE and CED initiatives have been criticized for operating inside the capitalist system without trying to change the system's rules (Roseland and Spiliotopoulou, 2016). At the same time, not all efficiencies translate to reduced resource extraction and consumption since other factors, such as population growth and industry interests, are also at play (Ang and Van Passel, 2012; Kopnina, 2015).

In the pursuit of sustainability or well-being, communities are challenged by the difficulties of addressing multiple objectives, thinking strategically and holistically about high-level goals, and meaningfully engaging their citizens, while also assessing projects and policies and tracking progress consistently (Caprotti et al., 2017; Connelly et al., 2013). The current abundance of SCD plans, assessment tools and community networks demonstrates acknowledgement of the need to take action and the desire to cooperate and exchange knowledge. Not all plans and agendas promote a whole-systems approach or are followed by implementation strategies, thus leading to lost opportunities, lack of credibility and increased public scepticism (Cairns et al., 2015; Roseland, 2012).

DEVELOPING A PRODUCTIVE COMMUNITY

Despite historical and theoretical debates as well as practical weaknesses, SCD should not be understood as a series of trade-offs between social, environmental and economic priorities; protecting ecosystems and promoting social inclusion at the local level need not mean job loss or economic downturn. Rather, SCD represents a new way of thinking about economic and other development over the long term: it is about "doing development differently" (Roseland, 2012). It requires fundamental changes to the status quo to stop "sustaining" an ill-functioning – and thus unsustainable – system and business-as-usual operations driven by quantitative increases, in favour of achieving meaningful improvements to community well-being, including the natural environment (Roseland and Spiliotopoulou, 2017). As Neuman explains, "to sustain an ecosystem or city over the long run assumes that it will be healthy" (Neuman, 2005).

Sustainability has in recent years expanded its scope to embrace advancements in resource and labour productivity (Jackson and Victor, 2011), collective action and SE (Connelly et al., 2013), local resilience, reorganization, self-reliance (Brugmann and Mohareb, 2012; Folke, 2006; Meerow et al., 2016) and resource regeneration (Robinson and Cole, 2015), as well as policies inspired by "just" sustainability (Agyeman, 2008) and a "shared ethical framework" (Earth Charter Initiative, 2010). Businesses have started to adopt green economy practices for efficiency in technology, design and management, and to promote green jobs (Kouri and Clarke, 2012), and communities are finding that they can actively pursue SD while improving their economic indices (Portney, 2013).

We suggest a way to overcome current problems in community sustainability planning and implementation, through a shift in mindset and subsequent action: from the current demanding, resource-extracting model of business-as-usual to a systemic, resource-regenerative model of a productive – and eventually sustainable – city. This transition, which has appeared in the SCD literature lately, involves shifting community development from a negative individualistic logic (reducing impact) to a positive systemic one (regeneration within a network of systems) (Brugmann, 2015; Girardet, 2015) and has the potential to contribute to achievement of sustainability goals so that the system we "sustain" thereafter is a well-functioning one.

During this shift, community, people and environment would be involved in a co-evolutionary process, engaging all related systems, sub-systems and stakeholders (Neuman, 2005). Traditional economic growth, based on weak sustainability principles, advises cities to maintain or increase their economic output by improving technology, accumulating capital and enhancing labour productivity. However, urban space that is planned using strong sustainability principles can lead to increases in human, resource and process productivity, improved urban assets performance and systemic interactions, ecological function regeneration and efficient use of resources (Brugmann, 2015; Girardet, 2015).

Community Productivity Conceptually

The concept of productivity is usually associated with economic and other resources: although economic, labour and resource productivity are quite developed concepts, there is not one widely accepted definition for ecological or social productivity within the urban setting. It is well recognized that economic and labour productivity is higher in cities that attract agglomeration economies and high-skilled employees – in developed and developing countries alike (Abel et al., 2012; Behrens et al., 2015; Glaeser and Xiong, 2017). We therefore posit that productivity has potential for great uptake by communities given its resonance with people as relevant to everyday life.

Conceptually, community productivity is multi-dimensional in the same way as sustainability and is grounded in strong sustainability principles. It seeks to move past the idea and practice of balance among community priorities toward the maximization and regeneration of the various forms of community capital. These forms represent the tangible and intangible assets and aspects of a community beyond the traditional triple-bottom line of SD. SCD incorporates natural, physical, economic, human, social and cultural dimensions of community development (Roseland, 2012).

Community productivity encompasses concepts and practices from various disciplines and theoretical backgrounds, including the above-mentioned notion of labour

productivity. Another important concept, regenerative design is a decades-long concept rooted in ecology and living systems theory (Robinson and Cole, 2015) and has been applied to agricultural (Rodale Institute, 2014) and architectural practices (Thomson and Newman, 2018). This concept is also expressed through applications of net-zero and net-positive design, which are promising despite often being implemented with a mostly anthropocentric and technical focus (Mang and Reed, 2015).

Regenerative development principles constitute a more recent and broader way of thinking that emerged partly out of the necessity to develop or redevelop the built environment with a holistic socio-ecological systems worldview that is aligned and synergistic with the natural environment and resources (Mang et al., 2016; Mang and Reed, 2012; Robinson and Cole, 2015). Similarly, the concept of regenerative sustainability appeared in the literature recently to emphasize the need for processes of collaborative planning and participatory backcasting which ensure that all partners' perspectives are considered, including that of the natural environment and its intrinsic value (Robinson and Cole, 2015).

Economic and resource circularity is evolving rapidly, with various initiatives implemented around the world, mostly at local or sectoral scales. Most circular economy models urge resource regeneration, using waste as a resource, and closing technical cycles in production and consumption (Ellen MacArthur Foundation, 2017; World Economic Forum, 2018). By introducing the notion of productivity, circular economy approaches would not only imply resource extraction at a lower rate than that of resource regeneration, but they would also contribute to the recovery and restoration of the natural environment and improve social and human aspects (Geissdoerfer et al., 2017). Ecological productivity can be enhanced in an urban area and in its hinterland, thus adding value to the ecosystem and making up for the damage done during the Anthropocene, instead of extracting or simply maintaining the current balance (Mang and Reed, 2015).

Productive community development is not limited to economic and ecological concepts and practices. It also explicitly focuses on the social, human and cultural dimensions of community capital. Cultivating a sense of place is a fundamental component not only of an inclusive education but also of strong, healthy and regenerative communities. As David Orr explains, looking at the world through the lens of place promotes a sense of responsibility for and a sense of unity with the natural environment (Mang et al., 2016; Orr, 2013).

Likewise, reclaiming the urban commons and developing a sense of community within a city and its neighbourhoods can help build social capital and take it a step further than established notions of social equity and environmental equality toward newer notions of place-making and co-production of public space (Burden, 2014), of sharing common places in a city, and fulfilling the right to the city for every person and for nature and biodiversity (Agyeman and McLaren, 2017). By seeing the city as an ever-evolving organism and by making the city commons (built or natural) more open, creative and attractive, these spaces can be accessible for and inclusive of all – regardless of origin or status – and inviting to "produce" culture and social relationships (Landry, 2008; Smithsimon, 2008; Wahl, 2016).

Concepts that apply in productive community development are closely intertwined with systems thinking (Wahl, 2016). For instance, even though the UN Habitat report on

The City We Need 2.0 (United Nations, 2016) includes a principle on creating a regenerative and resilient city, it only refers to resource regeneration and infrastructure/energy resilience. Community productivity can converge all the principles in this UN Habitat manifesto in the spirit of the concepts and theories mentioned above. For a complete application of systems theory in this approach, a community needs to carefully analyse the higher-level systems and networks to which it belongs and the sub-systems of which it is composed, and explore perspectives from many disciplines (Meadows, 2008; Uphoff, 2014).

Community Productivity Operationally

Operationally these concepts, combined under the umbrella of productivity, can inform and guide community visions and goals as well as the methods and metrics required to assess progress. Enhancing community productivity entails investment by many community actors to achieve improvements in all forms of community capital (Spiliotopoulou, 2019):

- Natural productivity, through ecological resource management, biodiversity and habitat restoration, local and regional food systems enhancement, promotion of urban and peri-urban regenerative agriculture
- Social productivity, through equity, connectedness, tolerance, inclusion, sharing of the commons, effective governance and justice, safety, individual and social resilience
- Cultural productivity, through heritage, arts, traditions, cultural continuity
- Human productivity, through lifelong learning, skills development and leverage, happiness and personal fulfillment, health
- Resource productivity, through infrastructure resilience, technological connectedness, resource efficient land-use and waste management, increased efficiencies, resource circularity and other regenerative practices
- Economic productivity, through economic diversity and resilience, inclusive economy, innovation fostering, living affordability.

Context matters when planning for and implementing community productivity strategies and actions. Political and other priorities and goals differ, and so do the issues and the decision-making processes. Best practices may not be transferable or easily implemented in every community and therefore contextual analysis and adaptable solutions are required (Roseland and Spiliotopoulou, 2017).

The concept of productivity can also contribute to measuring a community's progress toward achieving sustainability goals, by using objective (data-driven) and subjective (survey-based) information collected within a framework of productivity metrics. A productive community would seek to regenerate its resources of various types by being net-positive, that is, by producing more capital than it consumes. This can be measured using a combination of effective and widely accepted indicators of sustainability and several new indicators specifically geared toward the productive and regenerative aspects of the community. Here are some examples of community productivity indicators (Spiliotopoulou, 2019):

- Growing space per dwelling unit
- Native plant preservation
- Energy from renewable resources (solar, wind, biomass, and so on), produced within the city or in adjacent cities
- Mix of land uses and compact development
- Regeneratively designed buildings (net-positive, energy label houses)
- Infill development
- Mix of housing options
- Modal split/share
- Industrial/commercial/construction solid waste reuse/recycle
- Local innovation (patents)
- Sustainable resource based jobs (in sustainable/organic agriculture, natural resource conservation or coastal restoration)
- Creative industry jobs
- Work opportunities for people with developmental disabilities
- Lifelong learning (vocational or other adult education opportunities)
- Positive individual health practices
- Life satisfaction and/or happiness perception
- Women and vulnerable populations' access to government
- Social service volunteering
- Confidence in local government
- Healthy and safe neighbourhood development initiatives
- Cultural access and participation
- Investment in public art and public art awareness
- Historic preservation initiatives

Community Productivity Examples

In our literature and practice review, we have identified numerous initiatives of community productivity. Examples of small-scale productivity cases exist in municipalities such as Adelaide, Australia (efficient use of local resources, dynamic public consultations, major organic waste composting schemes, impressive renewable energy development), Copenhagen, Denmark (energy efficiency initiatives, public transit and cycling uptake, extensive information campaigns and debates, exemplary waste management), The Hague (Central Innovation District, currently under development) and Amsterdam, the Netherlands (successful sharing and collaborative economy ventures), Bristol, UK (renewable energy initiatives, successful civil society partnerships, climate resilience actions), Medellin, Colombia (inclusive social practices, long-term participatory planning, efficient transportation system), Kigali, Rwanda (leader in knowledge-based sharing economy) and Guangzhou, China (cultural and social inclusion initiatives, large-scale urban development programs, efficient wastewater management) (Girardet, 2015; Razavi, 2017, 2018; Urban Innovation Community, 2015; WA Contents, 2018; Wahl, 2016).

Regenerative practices also exist around the world within specific sectors, such as energy and built environment (e.g. Beddington Zero Energy Development in the UK, Masdar in Abu Dhabi, Portland, Oregon's Eco-District initiative, the Arbed scheme in Wales, UK, or districts in Freiburg and Hamburg, Germany), social and human capital (personal and

skills development research by the Theory U Lab at MIT, safety and well-being initiatives by the 8 80 Cities organization based in Toronto, Canada), natural environment protection and restoration (numerous regeneration projects mapped by Spherical Studio based in Oakland, California), and agriculture (e.g. urban farming programs in Havana, Cuba, community gardens in New York City and elsewhere, or energy efficient and hydroponic use of farmland in Shanghai and Beijing, China) (8 80 Cities, n.d.; Girardet, 2015; Hunt and de Laurentis, 2015; Roseland, 2012; Scharmer, 2018; Spherical Studio, n.d.).

CONCLUSION: THE PRODUCTIVE COMMUNITY POTENTIAL

As urban areas continue to grow and extract resources, they impose a disproportionate impact on the biosphere while suffering from economic and social challenges within their boundaries (Newman and Jennings, 2008). The significance of developing – as opposed to only growing – urban assets is increasingly being recognized by SCD researchers and practitioners. The traditional notion of urban economic growth is based on weak sustainability principles, but this century's realities and planetary constraints require that urban development is guided by strong sustainability values and whole-systems thinking.

Future community development research should emphasize performance enhancement, impact and user benefit increase, human productivity strengthening, effective and inclusive decision-making processes, co-production of community space and efficient use and regeneration of resources. These are values and outcomes that are not always recognized or successfully implemented or assessed using current SCD agendas (Clarke, 2012; du Plessis, 2012; Joss et al., 2015; Newman and Jennings, 2008; Roseland, 2012).

The application of community productivity principles has real potential to increase quality of life despite and perhaps in part because of lower levels of material expectations ("standard of living") by increasing the well-being of current and future generations. A productive community can be simultaneously livable, resilient, healthy, smart, regenerative, safe, creative and happy (Brugmann, 2015). These positive results can raise this dynamic paradigm to be the new normal for communities to sustain and achieve locally relevant long-term sustainability goals while also contributing to the achievement of the 2030 Sustainable Development Goals.

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