SYSTEMS AND SYSTEMIC APPROACHES FOR PARTNERSHIP WORKING TOWARDS THE SUSTAINABLE DEVELOPMENT GOALS

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Definitions

The United Nations (UN) promotes the importance of multi-stakeholder partnerships to work towards the achievement of the Sustainable Development Goals (SDGs) by 2030. These stakeholders include governments and the private, public, & non-profit sectors to build meaningful relationships, to bring about joint action to tackle a shared interest or concern. The SDGs highlight a multitude of "wicked problems" that Rittel and Webber (1973) describe as having high complexity and requiring multiple stakeholders across sectors to work together to solve them. These types of problem situations concern many interested stakeholders with diverse worldviews; success requires forming agreement among the parties involved, many uncertainties, and the absence of reliable data (Mingers, 2011). This calls for holistic approaches – 'systems thinking' offers an art to *"seeing the whole"* (Senge, 2006). This includes the analysis, synthesis, and understanding of interconnections, interactions, and interdependencies at multiple levels (Davidz & Nightingale, 2008). Systems-based approaches are useful in problem structuring, dealing with interrelationships, understanding multiple perspectives, making boundary judgments, but always regarding the context of use – 'the way of the world' (Reynolds and Holwell, 2010). Some explicitly help agents move towards evaluating and taking purposeful action. This paper outlines seven systems-based approaches and evaluates how they can be used to address the SDGs in cross-sector partnerships. These include: 1) *Systems Dynamics*, 2) the *Viable Systems Model* (VSM), 3) *Strategic Options Development and Analysis* (SODA), 4) *Soft Systems Methodology* (SSM), 5) *Critical Systems Heuristics* (CSH), 6) *Theory U* and 7) *Systemic Intervention*.

1. Introduction

The field of sustainability has aroused much interest and it has grown in importance over the last fifty years. It is an expansive, multi-faceted, and heavily debated concept, which first came to prominence in Meadows, Meadows, Randers and Behrens (1972) the *"Limits to Growth"*. At the heart of this debate is an explicit connection and widespread recognition of a changing relationship between business and communities. This change is partly due to unprecedented levels of economic growth in most countries, spurred on by the industrial revolution from the 1760s. In the last decade alone, there has been vast technological change, market consolidations, new markets emerging, a shift to a service-based knowledge economy, and disruptive innovations. These structural changes fundamentally alter the rules of the game and are all shaped and based, to an extent, on global economic activity.

The emerging 'sustainability paradigm' presents challenges and opportunities for the next generation of leaders. It gives prominence to *'purpose beyond profit'* in the business models of the future and how an organization engages and interacts with multiple stakeholders (both internally & externally) in harmony with natural/ecological ecosystems. In response to this changing landscape, the membership of the United Nations (UN) agreed to adopt 17 Sustainable Development Goals (SDGs). The SDGs offer a blueprint to tackle these challenges (i.e. poverty, inequality, climate, environmental degradation, prosperity, and peace and justice). The SDGs offer

encouragement to seize the abundance of opportunities to find solutions to these issues (e.g., in growth areas such as mobility systems, healthcare, energy efficiency, clean energy solutions, See Business and Sustainable Development Commission, 2017).

The UN (2015) recognizes the need for cross-sector collaboration to tackle the problems identified in the SDGs. Cross-sector collaborations are defined as relationships involving two or more sectors that work cooperatively to address societal issues (Bryson, Crosby & Stone, 2006). Capra (1996) explains that when trying to understand the major issues of present times, it becomes clear that they are all interconnected and therefore part of the same system. Given that this is true of the SDGs then it is appropriate to consider these as a systemic issue that cannot be resolved by any single sector acting alone but only through partnerships (Austin, 2000, Fadeeva, 2005; Googins & Rochlin, 2000; Waddock, 1988). Sustainable Development Goal 17 focuses on 'partnerships for the goals' – to strengthen the means of implementation and revitalize the global partnership for sustainable development (see https://www.globalgoals.org/17-partnerships-for-the-goals). SDG 17 is broken down into 19 targets and indicators that the UN will use to assess the extent to which the goal has been achieved. The sustainability paradigm embodied in the SDG's present the *ultimate* "wicked problem". The UN has given a call to action, and in response to this, numerous academics and practitioners have offered solutions based on systemic and collaborative approaches.

During the second section of this paper, it is explained how sustainability can be considered as a systemic problem and the case is made for applying this approach to the SDGs. The third section of this paper explores how cross-sector collaboration fits in with a systemic approach for implementing the SDGs. During the fourth section, seven different systems approaches are outlined in the context of partnership working. Following on from this discussion, the fifth section outlines how to practice systemic sustainability to meet the goals, focusing on developing meaningful relationships between stakeholders in different sectors, co-creation in partnership working, and the criticality of regenerative ecosystems to create systemic change. Finally, the paper ends with concluding thoughts and offers recommendations on future avenues for research in this crucial area.

2. Sustainably as a Systemic Problem

Today's major problems faced by society, such as climate change; pandemic; food security; and a broken financial system, cannot be viewed and understood in isolation (Capra & Luisi, 2014). These problems are interconnected and interdependent, hence they are systemic issues. In Lester Brown's, Plan B (Brown, 2003), he showed with flawless lucidity how poverty leads to resource depletion, worsened by climate change, causes failing states that are incapable of providing security for their citizens. The sustainability paradigm can be regarded as the *ultimate* "wicked problem". As Rittel and Webber (1973) state 'wicked' problems have high complexity and requiring multiple stakeholders across sectors to work together. Such problematic situations are not well framed and there is trouble agreeing on objectives. These types of problem situations concern many interested stakeholders with diverse worldviews; success requires forming agreement among parties involved, many uncertainties, and the absence of reliable data (Mingers, 2011). These types of problems cannot be solved with a reductionist approach, rather there is a need for a more holistic approach. This need has highlighted the role that systems thinking can play in moving towards a more sustainable future.

Senge (2006) defines systems thinking as an art for *"seeing the whole"* and method for visualizing interrelationship instead of things, foreseeing forms of change rather than static snapshots. Davidz and Nightingale (2008) develop further the idea of interrelationships and interdependencies. They see systems thinking as the analysis,

synthesis, and understanding of interconnections, interactions, and interdependencies at multiple levels (Davidz & Nightingale, 2008). In ecology, systems thinking examples include ecosystems in which numerous elements such as water, air, animals, and plants collaborate to live or they will not survive (Abbott & Wilson, 2016). In organizations, systems comprise of staff, structures, and processes that labor together to make an organization "strong" or "weak". In terms of sustainability, the neo-liberal economic model adopted by the world is causing social deterioration and ecological degradation at an alarming rate (Robinson, 2014). New studies have recognized the limits of capitalism and highlighted the value of a sustainable economy that adopts a rounded approach to development, in terms of economic, social, and environmental factors to achieve long term efficiency, and human wellbeing (Constanza, 2013).

The UN recognizes that ending poverty must go together with strategies that build economic growth and address a range of social needs including education, health, social protection, job opportunities while tackling climate change and environmental protection. There is a clear understanding that all issues, challenges, and solutions, whilst many and complex are all interlinked in one global system. It might be that increasing economic growth and development would help towards achieving some of the SDGs, such as Goal 1 and 2, concerned with poverty and hunger. However, this economic development might cause harmful externalities that make it difficult to achieve other goals such as goal 13 on climate change, etc. It appears the SDGs are addressing messy problems that are interrelated and have links to multiply levels of stakeholders across communities, regions, governments. The ideal that you can formulate workable solutions to these issues in a non-systemic way is flawed.

3. Cross-sector Collaboration, Systems Thinking and Goal 17

The UN describes the SDGs as "a universal call to action to end poverty, protect the planet, and ensure that all people enjoy peace and prosperity by 2030" (www.undp.org). They explain how these 17 goals are all integrated and how action in one area will have an effect in other areas. The final goal (Goal 17 - partnerships for the goals), has 19 targets. Whilst they are all of equal importance, the interest in this paper is in the seven systemic targets that are split into three categories: *policy* and *institutional coherence*, *multi-stakeholder partnerships* and *data, monitoring & accountability*.

The UN focus on partnership working for sustainable development predates the SDGs, with examples such as Agenda 21 (Reed & Reed, 2009; MacDonald, Clarke, Huang, Roseland & Seitanidi, 2019). MacDonald *et al.,* (2019, pg.4) comment that "The UN global sustainable development agenda has been widely influential in the promotion of the multi-stakeholder partnership approach for addressing sustainable development challenges." It may be tempting to consider grand partnerships, between governments and intra-governmental agencies as being the focus for such intervention. Clarke and Crane (2018, pg. 3) suggest that much of the literature has focused on partnerships at the macro level as one of their main aims is to 'address complex social and environmental problems that are too large or intractable for one organization'. However, many authors have widened out this focus to include a larger range of partnerships. Austin and Seitanidi (2012, pg. 952) in their review of the outcomes of cross-sector partnerships state that "at a broader societal level the collaboration may also contribute to welfare-enhancing systemic change in institutional arrangements, sectoral relationships, societal values and priorities, and social service and product innovations, as well as improving the environment". Wahyuni (2019, pg. 1) supports the view, "Partnerships for sustainable development denote multi-stakeholder initiatives that are voluntarily undertaken by a government, non-government organizations and civil society aimed at contributing to the implementation of the 2030 Agenda to achieve the 17 Sustainable Development Goals (SDGs)".

Wahyuni (2019) states that partnerships can be classified in three different ways, *leverage/exchange partnerships*, *combine/integrate partnerships*, and *transform partnership*. Whilst the first two types of partnerships involved sharing resources, it is only the 'transform partnership' that involves multi-stakeholders, co-creating solutions to complex and messy problems, and that these are aimed at dealing with systemic issues. It might be argued that local organizations are best placed to form partnerships with the aim of co-creating solutions to sustainability issues and that the role of the SDGs is to influence this. If these are accepted as systemic issues, then numerous small-scale interventions with no guiding hand will be problematic. The UN has set the agenda with the SDGs that allow governments and third sector organizations to understand how these problems are interlinked and for appropriate solutions to be developed through multi-stakeholder collaboration.

4.   Different System Approaches to Sustainability

Systems-based approaches have been used to help address messy and ill-defined "wicked problems". This includes problem structuring, dealing with interrelationships, understanding multiple perspectives, making boundary judgments, but always regarding the context of use – 'the way of the world' (Reynolds & Holwell, 2010). Plus, some explicitly help agents move towards evaluating and taking purposeful action. There have been many contributions that have sought to provide an overview of different systems approaches. For instance, Jackson (2000) offers a classification according to their theoretical underpinning, while Midgley (2014) adapts Cabrera and Colosi (2008) four patterns of thinking to derive what he terms 'emphases' of systems approaches. It must be noted that there are various methodological perspectives (Cabrera *et al.,* 2008) taken from different disciplines. This makes it is difficult to unify them – each adds value and must be selected considering the type of analysis and/or intended intervention. Midgley's revised classification of Cabrera *et al.,* 2008) original work is outlined here, as it generally includes Jackson's contribution yet offers a more accessible and simple terminology. These include:

- *Boundary:* approaches for exploring value and boundary judgments about what should be included in or excluded from the analysis.
- *Relationship*: approaches for understanding complex causality; feedback; vicious and virtuous circles; and the possible consequences of intervention.
- *System:* approaches for developing viable and highly responsive organizations at multiple levels (global to local).
- *Perspective:* approaches for addressing conflict; exploring multiple perspectives; developing mutual understanding; and agreeing solutions that people are willing to implement.

Reynolds and Holwell (2010) provide a compilation of five systems approaches that continue to evolve and are applied in new contexts. These include 1) *Systems Dynamics*, 2) the V*iable Systems Model* (VSM), 3) *Strategic Options Development and Analysis* (SODA), 4) *Soft Systems Methodology* (SSM) and 5) *Critical Systems Heuristics* (CSH). Since Reynolds and Howell contribution in 2010, two additional approaches can be included: *Theory U* and *Systemic Intervention*. Both come from a tradition to bring about systems-level change, focusing on 'intervention' following understanding messy situations. In section 6, these approaches are considered in terms of their different 'emphases' and some emerging systemic issues regarding partnership working towards the goals.

4.1   System Dynamics

'System Dynamics' was developed initially by the work of Jay Forrester in the late 1950s, as a way of applying simulation principles to the business environment (Forrester, 1995). These systems may arise from complex social, managerial, economic, or ecological systems - literally any dynamic systems characterized by

interdependence, mutual interaction, information feedback, and circular causality (Richardson, 2011). Early applications sought to focus on understanding the dynamic behavior of complex industrial processes (i.e. Forrester, 1958). Forrester (1971, p. ix) showed that System Dynamics can be used to understand the 'feedback-loop structure of systems' and their subsequent 'dynamic behavior'. Such loops can be conceptualized in the form of mental models, developed through a dialogue between the modeler and decision-makers. This discussion alone provides a unique learning experience of the dynamic characteristics of the system and ideas on how the system can be improved. Following this, computer simulation can be used robustly to examine what Lane (2000) terms the 'behavioral consequences over time' of the system. System Dynamics is now used in different sectors for policy analysis and design. One of the best-known models has been highlighted in Section 1, noting Meadows *et al.,* (1972) influential book: *The Limits of Growth*. Meadow *et al.,* used System Dynamics to model a socio-economic system to understand the demands on the planet from exponential population growth.

4.2   Viable System Model (VSM)

The VSM is an approach that emphasizes the 'viability' of an organization as a 'system' - distinguishing the link between value creation and how this is brought about locally (within and between business processes) and globally (stakeholders and the wider environment). VSM was firstly developed in the late 1960s by Stafford Beer, underpinned by a strong cybernetic tradition and has been mainly used for organization design and diagnostic. This includes improving resource allocation and relationships to produce organizations that are capable of creating, regulating, and producing espoused purposes and values (Dominici, 2013). This is an important distinction as the approach makes an explicit link between value creation and how this is created within and between local and global processes. A system is said to be 'viable' as being able to maintain a separate existence (Beer, 1979). This was later distinguished as 'maintaining its identity independently of other such organisms within a shared environment' (Beer, 1984, p. 14). Purpose and values distinguish one organization from another, as well as how value is created. These are internal considerations within an organization's control, yet it important to build capacity for systems to adapt to changes in the environment. To do so, the five systemic functions: *policy, intelligence, cohesion, coordination,* and *implementation* (as adapted by Espejo & Harnden (1989) in the tradition of Beer's earlier contributions) can be analyzed to determine viability and how to build a more responsive and resilient organization. Espinosa, Harnden and Walker (2008) suggest that the VSM is useful for applications of sustainability, however, examples of further applications are lacking to date. Two notable applications are Barile, Quattrocicchi, Calabrese and Iandolo (2018) along with Panagiotakopoulos, Espinosa and Walker (2016) who further demonstrate the explicit link between sustainability and systems adaptability in achieving its purpose. They also argue that 'viability' is also dependent upon its relationships with stakeholders in its environment.

4.3   Strategic Options Development & Analysis (SODA)

SODA is an approach, developed originally by Eden (1989), to help understand different perspectives in a messy problem. The analyst requires two key skills: *facilitation* and *model construction*. To follow *processes* to bring about team working in a complex situation and gathering of *content* from participants. The *process* incorporates interviewing and cognitive mapping – drawing a rich understanding of the problem situation and negotiation. Cognitive maps capture the wisdom, experiences, and beliefs of individuals and groups (can be facilitated with specialized software), to cluster joint meaning, which can aid reaching consensus and the identification of any disagreements. Although the approach has been used extensively, applications for sustainability are lacking, yet the approach can offer a more structured and pragmatic approach to gain different subjective views of the problem situation. This can include conflict between stakeholders on an understanding of the real and emerging nature of the problem, shared values and worldview, and possible solutions.

4.4   Soft Systems Methodology (SSM)

SSM has gained popularity and widespread use, since its development in the late '70s by Checkland (see 1981, 1990, 1999) to deal with complex and messy problem situations. Checkland intended to allow initially tentative thinking to inform practice, which then becomes the source of enriched ideas, that inform desirable and feasible change. This is done through deliberation on the problematic situation, options for transformation, and possible actions to improve the situation (Checkland, 1999). This is realized by following the four stages of SSM (See Checkland & Scholes, 1990): 1) *to find out about the problem situation*; 2) *formulate some relevant purposeful activity models*; 3) *debate the situation, using the models*, and 4) *take action in the situation to bring about improvement*. Utilizing techniques and practices such as 'rich picturing' to capture different stakeholder views of the problem situation, expressing notional systems as 'root definitions' following the 'CATWOE' mnemonic (i.e. Customers, Actors, Transformation process, Weltanschauung or 'world-view', Owners and Environmental constraints). Following this, the root definition can be developed more fully into a 'conceptual model' that can be used to help structure debate about potential action(s).

Rich picturing was shown to be useful in Weaver, Crossan, Tan and Paxton (2018) study, to express different pictorial representations of different cross-sectoral views on the connectively and alignment of business and societal goals. However, the 'CATWOE' mnemonic was found to be problematic in exploring understanding and meaning in different sectors and community contexts. The general premise of the mnemonic, as captured by Avison, Golder, and Shah (1992) was found to be sound. In terms of questioning: who is doing what for whom, and to whom are they answerable, what assumptions are being made, and in what environment is this happening? This was also highlighted by Midgley and Reynolds (2004) who proposed "BATWOVE" adapting the 'C' with 'B' for Beneficiaries and adding 'V' for Victims. Weaver *et al.,* (2018) recognized that 'beneficiaries' is a useful term in cross-sector collaborations, yet 'victims' and 'owner' reinforced a "them and us" attitude between business and communities and did not help when seeking to form collaborative relationships. Discussions around the 'W' were also seen to be helpful from multiple cross-sectoral perspectives, following Checkland's (1989) premise that the 'W' is central to making the description of purposeful activity meaningful. This is helpful in partnership working, to formulate a sense of 'purpose' and mutual understanding across different stakeholders (from different sectors). Through the deliberation of the situation and potential options for change, before bringing about an intervention by one or more stakeholders in a community setting (recognizing that 'meaningful' is determined with and in dialogue with the communities themselves).

4.5   Critical Systems Heuristics (CSH)

Critical systems heuristics (CSH) has its origins in the early 1980s by Ulrich (1983) to help facilitate reflective practice to discover new meaning when exploring and debating the relevant aspects of a problem and evaluation of different courses of action. Ulrich (1983) draws on the importance of making 'boundary judgments' recognizing that any improvement needs to be defined in the context of the entire relevant system, otherwise sub-optimization will occur. The central tool to reflect upon this is 'boundary critique' to make value judgments on what issues and stakeholders are important or peripheral (Ulrich, 1996). Ulrich (1983) plus Ulrich and Reynolds (2010) suggest that the boundary can be questioned based on *motivation, power, knowledge,* and *legitimacy* to determine a claim's 'anatomy of purposefulness'. Although Ulrich (1987) describes CSH as an approach for social system design, applications are lacking to date, in the area of forming and supporting partnership working towards the goals. For instance, CSH may help with determining stakeholder compatibility and selection, identifying potential conflict in partnership working, and ensuring communities themselves are involved/not marginalized in the analysis and subsequent intervention.

4.6   Systemic Intervention

'Systemic Intervention' was developed by Midgley at the turn of the century, to frame systemic inquiry. This approach has the advantages of mixing methods from a variety of sources, including the incorporation of the CSH method to make value and boundary judgments. Midgley (2000) defines Systemic Intervention as a *purposeful action by an agent to create change in relation to reflection upon boundaries.* Midgley takes an emancipatory approach to identify potential conflicts between different perspectives on offer and to consider who may be marginalized by stakeholder participation and potential action (Midgley, 2000). Taking marginalization into account during interventions is important, to promote and revalue the contributions that can be made by marginal groups and is crucial in taking account of possible consequences (Midgley, Munlo & Brown, 1998). Midgley (2016) introduced the concept of 'value conflicts' - that seeks to explain the patterns of mutual stigmatization, that inhibits the emergence of new understanding and actions. Midgley (2000) provide a specific definition for the term 'values' as *concerned with the purposes that people pursue in action* and differentiate them from general principles and virtues, such as kindness and modesty. Midgley (2016) also highlights that 'value' and 'boundary judgments' are intimately connected. The final element of Midgley's (2016) theory is the mutual stereotyping and stigmatization of each stakeholder group by the others. This resonates with challenges in forming meaningful cross-sector collaborations, as Weaver *et al.,* (2018) identified that power in such a relationship is dominated by "for-profits" who control the majority of resources in any Western economies. Additionally, that communities themselves (can be represented by third sector organizations) are best placed to understand the problem situation and should be involved in the analysis and the intervention(s).

4.7   Theory U

Theory U can be regarded as a systems approach for managing systems change over two decades of action research by the Presencing Institute (MIT), most notably the work of Otto Scharmer. The approach offers a process in the shape of a "U" with a three-part system model: *observe, reflect, act.* Scharmer (2009) book struck a chord at the start of the global financial meltdown in 2007/2008. Challenging the reader in the 'Age of Disruption', he recognizes the ecological (exploitation of natural resources), social (growing inequalities), neo-liberal economic model (based on a competitive market economy that is constantly being challenged), and the spiritual divide (manifested in the increase of burnout, depression/anxiety, etc.). Theory U has seen widespread application, across Government and in different sectors. Theory U success is due in part to its accessible language, widely available ULab learning platform, and narrative on global challenges. Yet this approach holds many similarities with Checkland's SSM and assimilates a wide variety of earlier theories, such as Schein's (1985) research on cultural studies and Senge's (1990) widely quoted system's thinking book. This theoretical underpinning is less described or indeed lacking. For instance, Heller (2019) recognizes that critical reviews of its grounding in social sciences and philosophy have been rare.

Like other systems approaches, Theory U seeks alternative 'perspectives' yet emphasizes an individual's calling in context (incorporating ever-popular mindfulness techniques, etc.) and ownership in any proposed action. Scharmer stresses the point that 'presencing' is the most important stage of the U when he discusses the implementation. 'Presencing' leads to a profound change in the inner place from which a system operates (Scharmer, 2016, p. 116). The importance placed on "decoding in conversational arenas" has some resemblance to CSH. However, the importance of critiquing and making boundary judgments, nor in the 'prototyping' stage are approaches to model the 'system' and examine 'relationships' made explicit. Towards the upward part of the 'U', the approach embraces Prahalad and Ramaswamy (2004) 'co-creation' concept. This places new meaning in involving the customer to "co-construct the service experience to suit their context" (pg. 8). Scharmer terms this more widely as a general process of prototyping new forms of economic and social

action (Heller, 2019). At the top of the 'U', Scharmer recognizes that innovation ecosystems co-evolve by connecting and renewing with wider economic, social, and ecological systems. Although Theory U can be said to have its roots in systems theory and practice, it does not seek to explicitly incorporate the variety of existing approaches described in this paper. One approach cannot fit all problem situations, analysis, and interventions, and systems practitioners should embrace this variety of approaches for the purposes at hand (See Jackson (2000); Midgley (2000); Midgley, Nicolson & Brennan (2017) discussions on 'methodological pluralism'). However, Theory U has three distinguishing features as a systems approach that are highly applicable for partnership working towards the goals: 1) seeking an individual's deep reflection into life; 2) integrating processes for 'co-creation' and 3) framing systems place within wider societal, economic, and ecological systems. Theory U presents co-creation as the definitive tool to overcome the current economic, social, cultural, and individual conflicts, and disruptions, thus, to release a global change of the present world in crisis (Heller, 2019).

5.   Practicing Systemic Sustainability towards the Goals

This section demonstrates how these approaches can be applied to practice 'systemic sustainability' (a term coined by Laszlo & Laszlo, 2011) towards the goals. Following the emphases of systems approaches described in section 4. However, three additional emphases are added, based on the previous discussion, these include:

- *Self and Regenerative:* approaches for acknowledging interdependence and connectivity of 'self' and 'nature' within regenerative ecosystems.
- *Co-creation:* approaches for supporting the meaningful engagement of stakeholders and processes for co-creation.
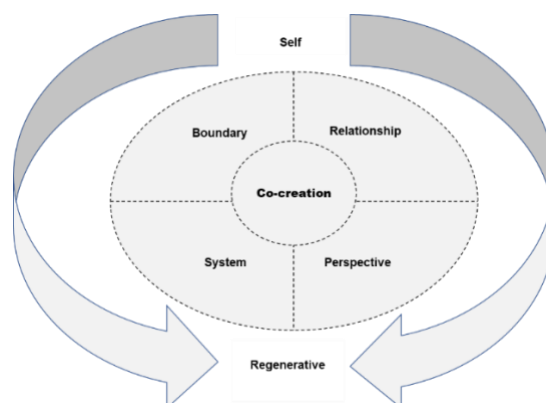

Figure 1 Emphases of Systems-Approaches for Partnership Working Towards the Goals [Adapted from Midgley (2014) citing Cabrera and Colosi (2008)]

5.1   *Building Meaningful Relationships to Create Effective Partnerships*

Central to partnership working is a relationship built on trust, mutual understanding, and a shared goal. This relationship must be meaningful – this includes integrating the views of relevant stakeholders and in cultivating cross-sector collaborations towards joint action. Weaver *et al.,* (2018) highlighted the lack of connectivity and alignment between business and societal goals, presenting difficulties in bringing about a meaningful engagement in such relationships. The challenge here is to cultivate 'purpose' which provides meaning in work, in terms of why an organization exists and for whom. However, the terms 'value' and 'values' are often misconstrued and hold different meanings in different contexts. In a business context, 'value' is perceived and determined by the customer based on "value-in-use" (Vargo & Lusch, 2004). The logic here is taken from a customer perspective and is often commodified in 'economic' terms. In the context of sustainability applications, the concern is with the people and communities that will be directly impacted by the potential solution to be designed and implemented by the stakeholders (Weaver *et al.,* 2018).

In the systems literature, 'purpose' is said to be made up of interests and values (Ulrich, 1987). Midgley (2000) and Yolles (2001) provide a specific definition for the term 'values' as concerned with the *purposes that people pursue in action* and differentiate them from general principles and virtues, such as kindness and modesty. These are articulated in the desired culture and serves as a compass (preferences for behavior or attitudes). This is helpful, as the 'action' concerns 'value creation'. In cross-sector collaboration, 'value' is created for and between all stakeholders, including the beneficiaries in the community themselves. Recognizing that in any stakeholder engagement a variety of purposes, made up of interests and values will be pursued. The challenge here is in what Weaver *et al.,* (2018) described as cultivating the *"North Star"* in building coalitions for action - *how values are put into purposeful action towards a shared goal.* Systems approaches, such as Systemic Intervention and CSH, as well as Problem Structuring Methods (PSMs) in general, hold considerable value here to understand multiple meanings, complex situations, and ill-defined goals. Boundary Critique (an essential concept in Systemic Intervention) may be useful to match compatible stakeholders who share interests and values and understand who may be marginalized by such actions. Additionally, the VSM considers value creation, setting an ethos, and communication links with stakeholders.

5.2   Unlocking Value Co-creation in Partnerships

Once a meaningful engagement is formed in a relationship, partners can work towards creating value for themselves and beneficiaries of any joint action. Weaver *et al.,* (2018) described this as 'unlocking a shared space' to help release more business resources into communities. Recognizing that business holds most resources in any Western economy. This brings about many challenges and issues (described in Weaver *et al.,* study) requiring a conduit (such as a Grant-maker, University, etc.) to help not only find a match between compatible partners but to also facilitate a *meaningful* stakeholder engagement. This is essentially a process of co-creation (contextualized in section 5.1 about addressing community challenges and issues).

The traditional systems-approaches noted in the previous sections were initially developed before the emergence of co-creation, while Theory U emerged at the same time and integrates the concept explicitly towards the upward part of the 'U'. This influenced the inclusion of co-creation in the emphases of systems-approaches shown in figure 1 and is placed in its center. Systems-approaches could be enhanced by helping practitioners in the process of co-creation. Co-creation has two essential steps: 1) *contribution* and 2) *selection* (O'Hern & Rindfleisch, 2010). In this context, the 'contribution' is the offer of resources (e.g. physical, human, assets), yet the 'selection' concerns matching suitable compatible partners (e.g. 'for-profits' with third sector organizations). Getting the right 'match' will influence the issues to be addressed, how problems are perceived, and how potential solution/intervention(s) will be brought to action (dealt with in section 5.1). Further to this, Systemic Intervention, originally developed in community-based applications, builds on this approach and helps stakeholders move towards intervention. This combined with CSH may present an opportunity to help facilitate meaningful engagement between stakeholders and support the co-creation process. Methodological advances here may also offer rigor and theoretical underpinning to Theory U's call and process to prototype co-creative ecosystems.

5.3   Create Systemic Change in Regenerative Eco-Systems

SSM, Systemic Intervention, and Theory U are systems-based approaches to help analysts and decision-makers to bring about systemic change/intervention. All three stress the importance of understanding a range of perspectives of the problem situation before moving to action. In the case of Theory U, Scharmer (2016) talks about how "presencing" leads to a profound change in the 'inner place' from which a system operates. Systemic

Sustainability can be considered, to begin with, 'oneself' – one's values and interests. As discussed in section 5.1, organizational purpose reflects the values, interests, and beliefs of the organization as a whole and this underpins an organizational culture and structures. Scharmer (2016) believes that success depends on the ability to sense emerging opportunities by letting go of old selves and structures. The concept links well with the theory of autopoiesis (meaning "self-production", see Jackson, 2000, pg. 184) in which a regenerative ecosystem encapsulates life as an on-going process. In the living ecosystem, there is a continuous process of transformation, hence, the behavior of individuals generates transformative capacity according to Giddens (1991) and Habermas (1984). In autopoiesis, Maturana and Varela (1980) differentiate two important aspects of regenerative systems i.e. *organization* and *structure*. The design of the *organization* of any regenerative system is the alignment of relationships among the system's component that governs the system's critical characteristics. In other words, the arrangement of relationships that provides a regenerative system its crucial characteristics can be defined by its pattern of organization. The *structure* of a regenerative system is epitomized by the tangible formation of its pattern of organization. Whereas the explanation of the regenerative system's organization contains an abstract plotting of relationships, the depiction of its structure involves describing the system's actual physical components. Capra (1996) proposes *process* as the third factor in a regenerative ecosystem. *Process* is the activity taking place in the on-going manifestation of the regenerative system's behavior of organization. Therefore, the process viewpoint is the relationship between the organization and structure. From an autopoiesis point of view, *organization*, *structure*, and *process* create an integrated conceptual framework to understand regenerative ecosystems (Capra, 1996). Luhmann suggests that an autopoietic, regenerative social system can be constructed through a process of communication network (Luhmann, 1989). Scharmer believes that in such a regenerative system, the success of a society is dependent on the success of individual members and vice versa. Therefore, in regenerative systems, the centers with the highest concentrated connections become the hubs of power. Hence, the power that influences the culture sits alongside organization, structure, and processes in designing regenerative systems (Capra, 1996).

The additional emphasis of systems approaches attempts to bring full circle seeing 'self'; within systems and the growing importance to appreciate *individuals*, *organizations* within *societal* and 'regenerative' *ecological* systems. Although systems theory has some roots in ecology, this has not yet been made explicitly situated to concern the organization's relationship in the wider natural environment. Take the dominant resource-based view school of strategic thought, which has been recognized to systematically ignore the constraints imposed by the natural environment (e.g. Meadows, Meadows & Randers, 1992; Hart, 1995). This presents a new basis for new business models and processes (Hobson, 2016), where value is created in cycles that greatly increase the end benefit to the user and society (Garcés-Ayerbe, Rivera-Torres & Suarez-Perales, 2019). The SDGs themselves accept the need for businesses to grow (goal 8), therefore, the move to a more circular economy, where waste is reused to create value can help reduce the paradox of limited resources and unlimited wants (Perry *et al.,* 2016). A circular economy can be thought of as an expression of systems thinking revealed through an economy comprising of materials, energy, and information stocks and flows that continue through various cycles of use, rather than one cycle ending in waste.

6.   Conclusions and Future Directions

The Sustainable Development Goals (SDGs) offer a blueprint for a sustainable world by 2030 but can only be achieved by forging meaningful multi-sector stakeholder relationships towards achieving them. The SDGs present the *ultimate* "wicked problem" – requiring multiple actors to understand, realize, and bring about systemic change both globally and locally. This paper has outlined seven system-based approaches that have applicability for partnership working towards the SDGs. These were reviewed considering the key emphases

of systems thinking approaches (i.e. *boundary*, *relationship*, *system*, and *perspectives*). Three additional emphases were added and said to be useful for bringing about meaningful cross-sector relationships: *co-creation, self,* and *regenerative.* These include the central need to co-create value between and with partners from different sectors and contexts. Additionally, to practice systemic sustainability, requires deep self-reflection on one's sustainability stance, contribution towards the goals, and realizing the limits of a finite planet. As well as those bounded within an organization and its stakeholders to create sustainable value, including an individual and organization's embeddedness in wider ecosystems.

This concerns how *'values are put into purposeful action'* - oneself, embodied in an organizational purpose, and the shared goals pursued by stakeholders in partnerships. Purpose needs to be continually renewed in relation to its environment. In this sense, organizational systems can be said to be regenerative and hold the ability for self-transformation (autopoietic). This becomes increasingly important as businesses pursue sustainable value creation positions, placing *"purpose beyond profit"*. Besides the circular economy agenda moves away from a traditional linear *"take-make-waste"* cycle and moves towards going circular – further stressing the need for *"systems thinking"*. This cannot be done in isolation – it requires partnership working between and with Government, Businesses, Third Sector Organizations, Consumers, and critically Concerned Citizens (noting that an individual can transcend each of these boundaries in multiple communities). The SDGs provide a platform and common language and stresses the global and local responses that are required to address them.

Further avenues of study exist to understand the complementary nature of the approaches for partnership working towards the SDGs. Systems Dynamics has already had an impact on demonstrating the dynamic nature of the decisions that are made today and how they can influence and leave their footprint on generations to come. This approach will continue to be used to model, the dynamic behavior resulting from multiple stakeholder actions (e.g. government policy, organizational strategy, consumer decisions) in achieving the SDGs. In any intervention, there will be a need to structure problem situations to sweep in the most diverse views, using relevant Problem Structuring Methods. One opportunity is to explore further the applicability of Systemic Intervention and Theory U to support agents to bring about a meaningful engagement in the relationship, that leads to the co-creation of value for partners and the community itself. Systemic Intervention, has a strong theoretical foundation, combining the utility of Critical Systems Heuristics and includes a reflection upon boundaries. Theory U on the other hand has been popularized recently and is widely used, yet its theoretical foundation can be challenged. It incorporates a process for co-creation and offers reflective practice on *self*, *organization, society,* and the *natural/ecological* environment. From a practice perspective, its pertinence continues to be redefined in the wake of new modern-day crisis. It is highly accessible and well-communicated and is well placed as an approach to address the nature of the SDGs. Theoretical developments that help forge and support meaningful partnership working towards the goals will be significant. This can include: matching partners based on shared interests and values, forming a shared goal (the *'North Star'*), processes for co-creation in community settings, understanding where conflict may lie, and appreciate who might be marginalized by the analysis and proposed intervention.

Cross References

Cross-Sector Partnerships: Role Toward Achieving the UN Sustainable Development Goals
Inclusive Partnerships: A Key to Achieving Sustainable Development
Multi-Stakeholder Partnerships
National Sustainable Development Strategies
Participatory co-design for sustainable development

Revitalize the Global Partnership for Sustainable Development Through Community Engagement
Systemic Issues

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