

Leading Transformative Change Collectively

***An Inquiry into Ways of
Stewarding Co-evolutionary
'Patterns of Aliveness'
For Global Sustainability
Transformation***

Petra Kuenkel



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FOR GLOBAL SUSTAINABILITY
TRANSFORMATION**

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List of Acronyms

4C	Common Code for the Coffee Community
AFI	Alliance for Financial Inclusion
BMZ	Bundesministerium für wirtschaftliche Zusammenarbeit
CE	Circular Economy
CEO	Chief Executive Officer
DKV	German Coffee Association
GDP	Gross Domestic Product
GRLI	Globally Responsible Leadership Initiative
GWP	Global Water Partnership
ICO	International Coffee Organization
ILO	International Labor Organization
IWRM	Integrated Water Resource Management
LSC	Large Systems Change
MNC	Multinational Corporation
NGO	Non-Governmental Organisation
OECD	Organisation for Economic Co-Operation and Development
QDI	Quality of Development Index
SDG	Sustainable Development Goals
SDSN	Sustainable Development Solution Network
SITRA	Finish Innovation Fund
UN	United Nations
UNGC	The United Nations Global Compact
US	United States
VUCADD	Volatility, Uncertainty, Complexity, Ambiguity, Diversity, Dynamics
WBGU	German Advisory Board Global Change
WCED	World Commission on Environment and Development
WWF	World Wide Fund for Nature

Abstract

This dissertation looks at globally sustainable development as a collective leadership challenge. Taking a leadership practice model, derived from multi-stakeholder collaboration initiatives, as a departure for the research, it enquires into how a systems view of life could advance the conceptualization and practice of leadership as the capacity of collectives of actors. It investigates, in particular, what this means for leading transformative change collectively in large systems, as required by the challenges captured in the UN Global Sustainable Development Goals (SDGs). It argues that a conceptual transdisciplinary deep dive into systems theory approaches, which advance patterns as constitutional for life processes to emerge, needs to inform approaches to transformative change for sustainability. Building on systemic insights from cognition theory, resilience concepts, design patterns and biosemiotics, it develops an emerging theory that suggests, under which systemic conditions 'aliveness' is enhanced in living systems. This results in a conceptual framework explaining how organizing principles of life processes interact to enhance aliveness in living systems. The research shows how these principles can be translated into the human realm and can be related to human competencies in leading change for sustainability. The dissertation illustrates the role of enhancing system aliveness in societal and global change initiatives with two case examples from complex multi-actor collaboration processes. It transfers the insights into the realm of large-systems change around global sustainability by identifying six enablers for sustainability transformation based on recent transformation discourses in science and practitioner communities. Using the emerging 'patterns of aliveness' theory as a lens, it shows how these enablers can be related to the aliveness enhancing principles and to the human competency dimensions of collective leadership reflected in the leadership practice model. This results in the development of a conceptual architecture for transformative change designs. The research concludes that leading transformative change collectively needs to be conceptualized as a way of stewarding co-evolutionary 'patterns of aliveness' in socio-ecological systems. It shows how using the conceptual architecture could improve strategies and initiatives for transformations to sustainability.

Dutch Summary

Dit proefschrift gaat in op de ontwikkeling van mondiale duurzaamheid als een uitdaging voor collectief leiderschap. Uitgangspunt is een praktijkmodel van samenwerkingsinitiatieven met de meest-direct belanghebbenden. Het stelt de vraag hoe je grootschalige, radicale collectieve verandering kan concipiëren en leiden, en wat dat zou kunnen betekenen in het kader van de doelstellingen beschreven in de Global Sustainable Development Goals (SDGs) van de VN. Het proefschrift beargumenteert dat er interdisciplinaire conceptuele verdieping nodig is van de systeem theorie of van op systeem theorie gebaseerde benaderingswijzen die duurzaamheidsprocessen bevorderen. Bouwend op inzichten uit de cognitie theorie, veerkracht concepten, design patronen en biosemiotics, schetst het proefschrift een nieuwe theorie over condities waaronder 'aliveness' bevorderd word in levende systemen. Dit resulteert in een conceptueel raamwerk dat de relationele interactie verklaart tussen zes organisationele principes die 'aliveness' in systemen kunnen vergroten. Het onderzoek laat tevens zien hoe deze principes kunnen worden vertaald in menselijke competenties om verandering te leiden t.b.v. duurzaamheid. Met twee voorbeelden uit de praktijk van complexe samenwerking tussen vele belanghebbende betrokkenen illustreert dit proefschrift dus de rol van het vergroten van 'aliveness' in maatschappelijke veranderingsinitiatieven die wereldwijd plaats vinden. Gebaseerd ook op recente 'transformatie' debatten in wetenschappelijke en maatschappelijke arena's worden de praktijkinzichten gezien in de context van wereldwijde veranderingsinitiatieven t.b.v. duurzaamheid. Gebruik makend van deze 'patterns of aliveness' theorievorming, als een lens, laat het boek zien hoe de 'aliveness' condities gerelateerd kunnen worden aan menselijke vaardigheidsdimensies van collectief leiderschap. Dit resulteert in de ontwikkeling van een conceptuele architectuur voor een ontwerp van transformationele verandering. Een conclusie van het onderzoek is dat het op een collectieve manier leiden van transformationele verandering gezien moet worden als een het bewaken en ondersteunen van co-evolutionaire 'aliveness' patronen van systemen. Het boek laat ook zien hoe door gebruik te maken van een conceptuele architectuur, strategieën en initiatieven voor de transformatie naar duurzaamheid verbeterd kunnen worden.

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Key note: *The Collective Leadership Compass as a Fractal for Large Systems Change in Collaboration*

WIN Conference, 1st to 3rd October 2015, Rome, Italy:

Key note: *The How Can We Shift the Way We Co-Create Future?*

Promoting Effective Partnership Co-Design Workshop, 21st to 22nd February 2016, Rotterdam, The Netherlands:

Session input: *A Framework for Effective Partnering*

Conference on Cross-Sector Partnerships for Systemic Change, 17th to 20th April 2016, Toronto, Canada:

Workshop input: *Partnering and the Global Goals*

Workshop input: *Large Systems Change Workshop*

7th International Conference on Corporate Social Responsibility; Humboldt University, 16th September 2016; Cologne, Germany:

Workshop input: *Large Systems Change – An Emerging Field* (with Sandra Waddock and Steve Waddell)

3rd Conferences on Corporate Social Responsibility, 3rd August, 2016, Cologne, Germany

Paper presentation: *Multi-Stakeholder Initiatives as Drivers of Responsible Supply Chain Management*

ACCION, Conferences „No Exit“, 23rd August 2016, Santiago de Chile, Chile:

Key note: *How to unleash the potential of collaboration? Leading collectively as a pathway to effectiveness*

High Level Meeting GPEDC, Nairobi, Kenya, 1st December 2016:

Session input side event: *Raising the Bar for Effective Partnering*

OECD workshop ‚Measuring Business Impacts on People’s Well-being‘, 23rd to 24th February, 2017, Paris, France:

Session design and input: *Well-being in Action in Business*

Transformations 2017 Conference, 30th August 2017, University of Dundee, Dundee, Scotland:

Workshop input: *Shifting Perspectives in Large System Change – Using Life Principles for Transformative Design* (with Sandra Waddock)

Transformations 2017 Conference, 1st September 2017, University of Dundee, Dundee, Scotland:

Workshop input: *Same, but Different – Systemic Approaches that Can Enhance Innovation in Transformative Design* (with Sandra Waddock and Steve Waddell)

SDG Transformation Forum, 2nd September 2017, Dundee, Scotland:

Workshop input: *Transformative Design for Sustainability Transformation*

Potsdam Summer School, 5th September, 2017, Institute for Advanced Sustainability Studies, Potsdam, Germany:

Session input: *Think Big, Act Small - Addressing the Challenges of SDG Implementation with Transformative Design*

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Introduction and Context: The State of the World

In July 2012, UN Secretary General Ban Ki-moon convened a high-level panel composed of 27 eminent people from around the world. The panel was invited to provide consultative advice for a global development framework beyond 2015 (United Nations, 2014b). Their report, published in May 2013, emphasized "the central importance of a new spirit to guide a global partnership for a people-centered and planet-sensitive agenda, based on the principle of our common humanity" (United Nations, 2014a, p. 8). In order to accomplish this transformation, the report suggested forging a spirit of solidarity, cooperation, and mutual accountability. After extensive consultations and broad intergovernmental agreement, the UN agreed on a set of Sustainable Development Goals (SDGs)¹, officially known as 'Transforming our world: the 2030 Agenda for Sustainable Development', in September 2015. These 17 goals, with their 169 targets, have been identified as networked targets with close interdependencies (Le Blanc, 2015). They are expected to function as a plan of action for world development; with voluntary achievement commitments for the public sector, the private sector, and civil society in all countries (see Fig.1).



Figure 1: The United Nations 2015 Sustainable Development Goals²

The UN's 2015 Sustainable Development Goals (SDGs), officially "Transforming Our World: The 2030 Agenda for Sustainable Development," provide a global framework for the world's actors to effect significant large system change (LSC). The SDGs are designed to bring about a more prosperous, equitable, and sustainable world for all; in short, a flourishing world. Created through broad intergovernmental agreement resulting from extensive stakeholder consultative processes, the 17 SDGs with their 169 targets are aspirational, global, and comprehensive.

These guiding aspirational and highly interconnected goals provide a framework for numerous initiatives at multiple levels. They focus on globally intractable issues such as complete eradication of poverty and hunger, good health and wellbeing for all, gender equality, and reduced inequality, among other laudable and exceedingly difficult goals.

The vision seems to be utopian: it is one of a world that is free from poverty, hunger and

¹ Source: Sustainable Development Knowledge Platform. Accessed on 17th July 2017: <https://sustainabledevelopment.un.org>

² Source of image (accessed on 1st July 2017): <http://www.globalgoals.org>

disease and at the same time a world where life can thrive – life of all species including the human. It is a world of peace where all people have access to sufficient education as well as to social protection and health care (Brundtland, 1987). In this world, well-being refers to physical, mental and social qualities, and humankind lives in harmony with nature within the boundaries of the planet Earth (Constanza and Kubiszewski, 2014; Pirson, 2012; Lovins, 1977; Rockström et al., 2009). Such a world would require re-defining an economic system that is currently built on depleting the earth's and human's resources (Berry, 1988; Buss and Craik, 1983; Capra, 1982). A new economic system would have to radically change to begin operating, as Korten (2015, p. 136) puts it, "in co-productive partnership with nature to maintain the conditions essential to all life," or as Fullerton (2015) suggests, as a regenerative economy that aims for long-term economic vitality by looking at an appropriate mix between market dynamic and governance systems.

However, the current state of the world is far away from this vision. Researchers from the Stockholm Resilience Centre have suggested nine interdependent chemical and biological planetary boundaries: climate change; ocean acidification; stratospheric ozone; biogeochemical nitrogen and phosphorus; global freshwater use; biological diversity; chemical pollution and atmospheric aerosol loading (Rockström et al., 2009). They reckon that humankind has already transgressed three of these boundaries and that the boundaries are interconnected such that transgression of one may accelerate the transgression of others. In addition, territorial wars as well as civil wars are raging in many countries. Nations that began to transform into democracies after the Arab Spring have a long way to go to achieve the necessary societal and economic stability. Millions of people are migrating for a variety of reasons; for example, to find places of peace, or better economic prosperity. Climate change's effects will presumably result in increased levels of migration (Black, Bennett, Thomas and Beddington, 2011; Kritz, 1987). In many countries, the gap between rich and poor is widening (Atkinson, 2015; Beinbocker, 2007).

It is increasingly clear that monetization of all goods (including many public goods) puts the market entirely before the interests of humankind and the planet (Hajiran, 2006; Kaul, 2013), and may not serve humankind or the planet as a whole (Frey and Stutzer, 2002; Fullerton, 2015; Godfray et al., 2010; Meadows, Randers and Behrens, 1972; Meadows, Randers and Meadows, 2004). The December 2015 climate summit in Paris invited hope that there is a growing global awareness carried forward by visionary, concerned and committed people from companies, cities, research institutions, governments and civil society organizations. Addressing sustainability challenges clearly requires different actors in all sectors to work together in a more fruitful and constructive way (Finidori, 2016; Kuenkel, 2016; Senge, Hamilton and Kania, 2015). No single actor has all the solutions, but each actor may essentially contribute a parcel of knowledge, a puzzle piece that counts. Partnering and multi-stakeholder collaboration between business, NGOs, government, the UN and communities are expected to be essential to achieve sustainability and development goals, but they will be needed at a scale and quality that goes far beyond the current capacity for collaboration (Bøås, Morten and McNeill, 2004; Kuenkel, 2016; Meadows et al., 2004; Peltoniemi and Vuori, 2005; The Organisation for Economic Co-operation and Development [OECD], 2015; Timmer, Creech, and Buckler, 2008).

The notion of sustainable development can be tracked back to the 1987 report of the World

Commission on Environment and Development. The report defined sustainability as the ability to “meet the needs of the present generation without compromising the ability of future generations to meet their needs” (WCED, 1987, p. 41). At the surface level this notion of sustainability, as well as the global agreements on the 17 goals, seems to be in alignment with the working definition of sustainability based on a systems view of life, as defined by Capra and Luisi (2014, p. 353): “... to design a human community in such a way that its activities do not interfere with nature’s inherent ability to sustain life”. However, the 17 Sustainable Development Goals are more complex and interdependent than a surface level definition suggests.

Sustainability challenges range from climate change to ecosystem decline, from energy insecurity to water scarcity. They affect resource management, poverty, economic justice, food security, demographic change, population growth and more. The need for engaging with sustainability is increasingly accepted in the corporate world, as businesses recognize that without a major shift, unsustainable global trends will impact them over the next 20 years (KPMG International, 2012; Hayward et al., 2013; Hay, 2013). Because the most pressing problems of the 21st century are all connected and interdependent, they cannot be interpreted or addressed in isolation. The major world challenges addressed by the 17 goals are all *systemic* in nature (Capra and Luisi, 2014) and require the driving of collective impact (Kania and Kramer, 2011; Patscheke, Barmettler, Herman, Overdyke and Pfitzer, 2014), regardless of whether they relate to energy, climate, economic activities, financial systems or food security (Brown, 2011; Meadows et al., 2004; OECD, 2015). Hence, they need to be addressed with a systemic approach to solutions generation (Brown, 2011). However, a more linear worldview that negates the interconnected nature and systemic complexity of evolutionary change, and which Capra and Luisi (2014) as well as many other scholars term mechanistic or reductionist, (Ackoff, 1998; Allen, Stelzner and Wielkiewicz, 1999; Biesta and Mirón, 2002), influences the dominant discourse within most educational systems and institutional environments and forms the cornerstone of more than 200 years of economic thinking.

This worldview has several consequences with regards to meeting sustainability goals. **First**, the institutions expected to deliver on the Sustainable Development Goals work in a silo mentality, with competitive planning modes that fuel the notion (or illusion) of measurable development based on perpetual economic growth. **Second**, the notion of development embedded in a non-systemic worldview tends to address issues separately while ignoring the interdependence of the planetary boundaries (Friedrich, Fetzer and Cornell, 2016; Meadows et al., 1972; Meadows, 1994; Rockström et al., 2009). **Third**, most planning and economic measurement systems not only fundamentally follow a perpetual growth paradigm but also tend to exclude non-linear, interconnected and systemic views of life and development (Capra and Luisi, 2014; Meadows, 1999; Bai et al., 2016).

However, a growing body of both activists and researchers criticizes the dominant linear and non-systemic approach to development and the economic growth paradigm, and also suggests alternatives (Capra and Luisi, 2014; Fullerton, 2015; Lovins, 1977; Meadows, 1999). A systems view of life could potentially incorporate shifts in perspective from the parts to the whole, from silo thinking to fostering networked collective action, from fixation on economic growth rates to revisiting the purpose of measurements. It could raise issues of

qualitative growth, re-focuses on process and relationships, and suggest that humankind find ways of dealing more effectively with complexity and uncertainty (Capra and Luisi, 2014; Senge et al., 2015).

The dilemma is obvious: on the one hand sustainability – *defined here as the ability of humankind to live well within the planetary boundaries and their systemic logic* - is on the agenda of every nation, every organization, and many citizens today. It is in many ways a global movement that cannot be ignored. On the other hand, it is not clear if this movement can accelerate the transformation quickly enough. The Paris goal of keeping warming 'well below 2°C' will remain an enormous challenge. The hope that arose from Paris is that collective action by different actors, including governments, engaged citizens, cities, companies, financial markets and civil society organizations, is possible. There is a high likelihood that the growth strategies that are necessary to pursue some of the sustainable development targets will clash with the environmental targets and the Paris climate agreement.

In addition, as mentioned above, reaching a more sustainable world will presumably require a fundamentally change in the way the world economy functions today (Donaldson, 2012; Fullerton, 2015; Lovins, 1977; Weber, 2015; Korten, 2015). This calls for a global mind-set shift accompanied by widespread implementation of sustainable behavior (Goepel, 2016). Furthermore, new forms of organizing, such as collaboration among different actors across institutions and sectors, are not only paramount, but also the sole route to successfully addressing the challenges the world faces (Hanleybrown, Kania and Kramer, 2012; Patscheke et al., 2014). In a global survey of more than a thousand CEOs, 84 percent (Haygroup, 2014) were convinced that the corporate world could have a decisive impact on global sustainability challenges, if there was a strong commitment to collaboration across sectors and to collective efforts for transformation. There are many examples of multi-stakeholder collaboration initiatives that attempt to address the complex challenges in collaboration (Bäckstrand, 2006; Kuenkel, 2015; 2016; Patscheke et al., 2014; Wilkinson and Eidinow, 2008).

A growing number of committed individuals and organizations, including leaders from business, academics, government, media and civil society organizations, have begun to create support for a new narrative. This narrative goes beyond the notion of sustainability as compliance to advocate the above-mentioned vision of a world that works for 100% of humanity *and* the planet (Lovins, 1977; Pirson and Lawrence, 2015; Weber, 2013). Such a vision requires an understanding of sustainability that is not limited to 'doing no harm' to planet and people, but continually improves the living conditions of all members of the global society as well as the natural world. At its core are respect for human dignity and the integrity of ecosystems (Waddock and Graves, 1997; Waddock, 2005). Interestingly, a growing number of social scientists are challenging the assumption that human nature is greedy and focused on individual and material benefits (Bowles and Gintis, 2011). Neuroscientists too have suggested that human nature seeks goodness, caring, collaboration with others, and connection to a larger purpose (Barbour, 1999; Low, 2011; Nucci and Narvaez, 2008; O'Connor and Yballe, 2007).

The above deliberations show that the transformation towards a more sustainable world

requires more than a declaration of global commitment to global goals. Instead, transformation calls for collective action by myriad actors at scales from local to global. This dissertation suggests that *leading such transformative change at scale can be supported by a new conception of collective leadership, understood as the capacity of different actors who jointly develop strategies and actions that are grounded in a systems view of life*. For this to happen there is a need to shift the way leadership is conceptualized in terms of the *who* as well as the *how* and the *what for*.

- The shift in the *what for* places leadership into the context of the world's future sustainability and the vision of a world that works for 100% of humanity and the planet.
- The shift in the *how* emphasizes the cooperative nature as well as the collaborative competency of the human species more than in the past, and subsequently builds collaborative leadership approaches.
- The shift in the *who* removes the focus on individual leaders and looks at how distributed collectives lead change.

The call for a profound sustainability transformation can be seen as an invitation to explore new forms of creating change collectively on a broad scale. Current institutional structures, top-down change interventions, and conventional linear planning and control mechanisms cannot be expected to successfully address these challenges (Liening, 2013; Waddell, 2011). Conscious forms of organizing human local-to-global (inter)action in networks (Waddell et al., 2015), governance systems (Folke, Hahn, Olsson, and Norberg, 2005; Pattberg et al., 2012), movements, and emergent organizational structures that are likely to be more responsive to the sustainability challenges presented (Kuenkel, 2016; Ospina et al., 2012; Waddell, 2016a) must be explicitly explored. However, people, acting individually and collectively, lie at the core of the required changes. Their shift in thinking and behavior is the cornerstone of a transformation in sustainability.

What transformation means in the context of sustainability is the subject of an ongoing discourse among academics and practitioners. *Transformation* refers to change that involves a deeply innovative approach towards thinking and acting, and towards power structures and relationships (Waddell et al., 2015; Avelino et al., 2014). Following Avelino et al. (2014) transformation is seen here as “fundamental, persistent and irreversible change across society” (p. 17). With reference to social innovation, the authors note that it needs to be understood as “[...] the *process* through which social innovations gain ‘durability, scale and transformative impact’ by interlocking with system innovation, narratives on change, game-changers and societal transformation (Avelino et al., 2014, p. 18).”³

However, the current discourse on global transformation (Bai et al., 2016) pays little attention

³ The author of this dissertation also follows Avelino et al. (2014) in the understanding that the concept of transformation needs to be distinguished from the concept of ‘transition’. “A transition is defined as radical change that follows a particular non-linear path, typically over a period of one to two generations. Such societal transition can be considered a type of societal transformation. However, not all societal transformations necessarily follow such a transition path. As such, societal *transformation* as a concept is broader than the concept of societal *transitions*” (Avelino et al., 2014, p. 18).

to how actors can collectively drive transformation. Actors with or without official positions of authority include leaders, change-agents, committed groups of citizens, multi-stakeholder and cross-institutional initiatives, or global and local action networks (Waddell, 2011). The urgency of the necessary transformation calls for replacing isolated actions and silo thinking with leading collectively at scale (Brown, 2011). It requires a paradigm shift in how individuals find their leadership roles in the spirit of collaborative co-creation and contribution to sustainable futures.

Actors who drive change matter, whether they find themselves inside or outside institutional structures, whether they have taken a mandate for change or are given one. Reality is more easily shaped by those who have a voice (Isaacs, 1999) or are given one. They act as screens highly visible to others, and their exemplary ways of bringing about change often have an impact beyond the official task. As they are nodes in a network of human agency, their enactment of reality counts. Better understanding their potential for shaping reality together may offer a crucial contribution to the global transformation discourse. This research will therefore attempt to **conceptualize collective leadership as the capacity of a collective composed of individuals (persons or institutions) in relational interaction, equipped with collaborative capacity, with the intention to make their joint contribution to a world in transformation count** (Kuenkel, 2015; Ospina et al., 2012; Senge et al., 2015). It also views leadership in the context of global sustainability challenges not as a neutral decontextualized act, but a conscious decision to contribute – or not contribute – to making the world more sustainable (Ferdig, 2007; Kuenkel, 2008; Kuenkel, 2016; Maak and Pless, 2009; Svensson and Wood, 2006).

This dissertation argues that in order to **lead transformative change for sustainability at scale**:

- Leaders and change-agents, as drivers of the sustainability transformation, need to be aware of the nature of complex adaptive systems (Bernstein and Linsky, 2016, Dooley, 1997; Lichtenstein et al., 2007; Choi, Dooley and Rungtusanatham, 2001). An understanding of a **systemic approach needs to be grounded in a systems view of life** (Capra and Luisi, 2014) and a **relational conception** (Gergen, 2009; Ospina et al., 2012) of how decision-makers, planners and implementers that have SDG implementation at heart lead global transformative change in institutions across all sectors and levels of the global society.
- A thorough and widespread understanding of the human ability (or inability) to foster **life-enhancing patterns of co-creation** (Capra and Luisi, 2014; Goepel 2016; Kuenkel, 2016; Gergen, 2009) for a more sustainable world must be developed.
- Decision-makers and influential leaders have the **capability to leverage the potential of multi-stakeholder collaboration** as a cornerstone for life-enhancing collective action, e.g. in the form of cross-sector and cross-institutional collaboration based on values such as partnership, mutual support and dialogue (Pattberg and Widerberg, 2014; Pattberg et al., 2012; Kuenkel, 2016).
- The transformation envisaged is supported by **models, frameworks, tools and instruments that resemble a holistic systems view of life** and that empowers leaders and change agents to enact and review transformative change in learning

and reflection cycles (Finidori, 2015; 2016).

These required shifts in conceptualizing and enacting leadership as the capacity of a collective of actors for an accelerated world transformation form the point of departure for this dissertation. However, there is an on-going dilemma between the widespread and deeply ingrained way institutions and corporations traditionally operate, and the need for a more systemic approach to finding solutions to global challenges advanced by many scholars (Finidori, 2015; Fullerton, 2015; Bai et al., 2016; Jaworski, 1996; Senge, Hamilton and Kania, 2015; Scharmer and Kaufer 2013; Wheatley and Kellner-Rogers, 1996). Poverty and inequity, climate change, civil and cross-border war, food security, inadequate health care, education reform, weak governance, and environmental degradation are all examples of large-scale complex system transformation challenges (Waddell, 2003; Waddell, 2011). They are inevitably messy and unpredictable, but need to be navigated to ultimately create better conditions for all stakeholders involved. This requires leaders across all levels of the (global) society to develop a joint capacity to shift a complex system from dysfunctional into more functional patterns of human interaction.

Socio-political-ecological systems can be described as complex adaptive systems (Waddock, Meszoely, Waddell and Dentoni, 2015; Innes and Booher, 1999) fraught with dysfunctional patterns of human-to-human and human-to-nature interaction. They are often stuck in downward spiraling vicious cycles that harm people, human systems, and nature (Gray and Moseley, 2005). However, there are many examples of global action networks in areas such as responsible value chains, food systems, finances, energy, or water (Waddell, 2011) that contribute to large system change. Human, social, and ecological systems are dynamic and complex by nature, which requires different interventions than those typically found in the results-chains or theories of change of governments, corporations, NGOs, and international organizations (Folke et al., 2005; Probst and Bassi, 2014; Rotmans and Loorbach, 2010). Large systems change (LSC) must be seen as a decidedly nonlinear 'organic' process involving multiple pathways and practices (Austin and Bartunek, 2003; Hotes, 2011; Waddock et al., 2015; Waddell, 2016a). There is no 'one right way' to bring about the change envisaged. Given the complexity of the systems, multiple efforts, from multiple sources, at multiple levels, with multiple different approaches will be needed.

A growing body of research suggests that current approaches to system change are deeply flawed in assuming that change can be managed and planned, and that the change needed is a linear process (Choi et al., 2001; Marion and Uhl-Bien, 2001; Stacey, 1995; Waddock et al., 2015; Waddell, 2016b). These scholars propose that that change can at best be stewarded towards aspirational goals, because numerous actors will be involved, taking many initiatives towards a wide range of places, issues, and topics. Hence, it is not surprising that multi-stakeholder collaboration is at the center of SDG Goal 17, which focuses on global partnerships and cooperation, and is becoming a common practice in addressing systemic challenges (Camacho, 2015; Le Blanc, 2015). Multi-stakeholder collaboration is a complex answer to complex challenges (Bäckstrand, 2006; Kuenkel and Schaefer, 2013; Van Tulder and Pfisterer, 2013). It necessarily integrates many different perspectives on problem definition, means to resolution, and what constitutes success.

Complex socio-ecological systems evolve in unpredictable ways because of non-linear

dynamic interactions (Bernstein and Linsky, 2016; Snowden and Boone, 2007; Allen, 2000; Choi et al., 2001). Change often requires large-scale interactions between multiple agents and agencies that transform these systems towards a dynamic balance in line with the requirements of the planetary boundaries. Strategies to address complex global problems, in the context of the Sustainable Development Goals, are often supported by investment and action streams, which emphasize solutions based in linear, hierarchical, expert-driven, planned-to-predefined target, and solution roll-out approaches. Complex challenges, however, require approaches that empower and engage affected parties in order to enable and nurture emerging adaptable, context-dependent solutions (Burns, Diamond-Vaught and Bauman, 2015). Pioneering conceptual approaches, broadly based on a systems view of life and invested in collective sense-making and collective co-creation, have already begun to address complex systemic challenges (Bernstein and Linsky, 2016; Kuenkel, 2016; Snowden and Boone, 2007; Snowden, 2015). While based in different disciplines, they share certain core elements, including multi-stakeholder engagement approaches, multi-layered thematic issues, and issue-activity based networks (Waddell, 2011), or system visualization and mapping (Snowden, 2015). Implicitly or explicitly, these approaches shift the locus of leadership from an individual attribute towards a capacity found within a collective consisting of multiple actors (Kuenkel, 2016; Ospina et al., 2012; Gronn, 2002; Hausschildt and Kirchmann, 2001; Pór, 2008; Friedrich, Vessey, Schuelke, Ruark, and Mumford, 2009; Collier and Esteban, 2000; Senge et al., 2015). This idea will be explored further in Chapter 3.

This dissertation scrutinizes the notion of **collective leadership for transformative change**. Complex settings like those of the implementation of the 17 SDGs require collectives of actors across several institutions in non-hierarchical relationships to become successful at leading the transformation (Kuenkel 2015, 2016). Together, they will have to define aspirational guiding goals that reach into the minds and hearts of the actors involved. They need to understand the organizing principles that inspire many other actors to drive self-organized change. However, a major problem is that the current research and practice discourse on transformation falls short of conceptualizing the way in which cross-institutional actors can lead transformative change effectively together. Looking at the **transformative effectiveness of such a collective** of actors is an interesting field of study. Cross-institutional actors are usually not organized hierarchically and so different conditions for leadership apply. This issue will be taken up in Chapter 3. In addition, this dissertation takes a thorough systems view of life, with all its implications regarding the conscious creation of life-enhancing patterns of human interaction (Varela, 1999; Alexander, 2004; Gergen, 2015; Kuenkel, 2016), leveraging diversity for resilience (Wheatley, 1999), invigorating self-organization (Maturana and Varela, 1987) and following the cyclical nature of a living earth system (Sahtouris and Lovelock, 2000). This view is rarely exhibited in any of the current conceptions of leading transformative change.

Current mainstream practice in leading change around sustainability transformation tends to take up some of these issues, but seems to stay attached to a focus on a linear, non-systemic worldview with a projectable and predictable future. In addition, the practical field of leadership still focuses on leadership within organizational settings, and on reward for performance measured in linear growth. Some scholars take up the ethical dimension of

leadership as an inherent commitment to fostering the common good (Pirson and Lawrence, 2015; Greenleaf, 1998). However, in order to implement the 17 Sustainable Development Goals, a broad-scale shift in knowledge generation towards a deeper understanding of **collectively generated transformation** for the common good is needed. In the context of this need, this research aims at contributing to an emerging knowledge stream by providing a new perspective on **collective leadership as an approach to large-scale transformation** in multi-actor settings.

Therefore, this dissertation takes as a starting point a practice model for navigating complex change in multi-actor settings, the **Collective Leadership Compass**, which has been developed by the author based on 20 years of practice in supporting international multi-stakeholder collaboration initiatives for sustainability. It is grounded in literature on leadership, participation, development theory, and systems theory that partly formed the conceptual background of an earlier publication (Kuenkel, 2008). The practice model has been further refined by interviewing sustainability practitioners to learn about factors in the success of collective action in multi-stakeholder settings (Kuenkel and Schaefer, 2013; Kuenkel, 2014). It has been elaborated further and illustrated with case examples in a recent publication (Kuenkel, 2016). Chapter 1 draws on this prior work to describe the practice model and briefly explain its conceptual origins before formulating the research questions of the current research.

Chapter 1:

1 The Point of Departure: The Collective Leadership Compass

The purpose of the practice model is to guide leaders in advancing transformative collective action for sustainability in complex, often cross-sector and non-hierarchical multi-stakeholder settings. Applying the Collective Leadership Compass in assessing, planning and evaluating change initiatives assists actors in shifting into a systemic mode of collectively navigating complex change in multi-actor settings across the boundaries of institutions. Goal 17 of Agenda 2030, mentioned in the introduction, acknowledges that partnerships are the cornerstone for sustainability transformation. This requires many actors to build a multiplicity of nested *collaboration systems*, which are understood here as issue-based systems of (institutional) actors aiming to change the status quo (usually a common good) for the better. In well-functioning *collaboration systems*, diverse stakeholders bring in concerns, interests and expertise, and learn from one another about their respective thematic knowledge and geographic context. They identify key challenges and articulate goals together. Drawing on their complementary roles, strengths and agility, they realize their shared vision. Practice shows that applying the Compass has invigorated collaborative action for systems change and supported the co-creation of functional collaboration systems in complex multi-stakeholder settings.⁴

The Compass rests on the conceptual premise that conscious collaboration, which involves setting up temporary or lasting systems of multi-stakeholder actors, is a form of bringing forth life. It assumes that the success of a collaboration system depends on whether the actors bring a sufficient degree of vitality. *Collaboration systems* can exist at many levels of the global society; they can overlap, interact and collaborate with each other. *Collective Leadership* is seen here as the capacity of a group of actors to catalyze systemic change across institutional boundaries in multi-actor settings (Pór, 2008; Kellermann, 2012; Kuenkel and Schaefer, 2013). The practice model for leading change in complex multi-actor-settings includes a number of conceptual premises:

- Complex change endeavors in multi-actor settings are too often geared towards an outer change with regards to sustainability. They often focus only on the issue of solving a problem or finding new solutions. Little attention is placed on the process of how individuals and collectives bring about the envisioned future. A better guiding model would **support awareness of co-creative processes**.
- Multi-stakeholder collaboration takes place in a rational issue-based environment, yet when it fails, the failure can most often be traced back to non-rational aspects like trust, misunderstanding, pressure, or disrespect. A guiding model must **integrate rational and non-rational aspects**.
- The urgency of addressing sustainability issues often leaves too little time for

⁴ These practice experiences have been published in Kuenkel (2016). Chapter 6 includes two case examples that exemplify the application of the practice model.

extensive joint reflection. Although it is obvious that, like all other leadership challenges, navigating change in multi-actor settings requires reflection, this is rarely the case in the author's experience. Hence, a guiding model needs to **function both at a superficial level** by enhancing minimum actions that make a collaboration system operational, **and at a deeper, more reflective level** of fostering the cohesiveness and effectiveness of the collaboration system.

- Complex challenges around sustainability require responses in multi-actor settings which in themselves are complex. A guiding model for multi-stakeholder collaboration must **adequately reflect the complexity**, but still be useful and action-oriented.

The Collective Leadership Compass⁵ is used as a diagnosis and action tool for planning, implementing and evaluating collaborative change initiatives. It supports stakeholders in navigating change by looking at underlying effective patterns of collaborative interaction. This enables them to manage complexity more effectively. Used as a way to focus mental attention, practice shows that the Compass can become critical in moving a fragmented group of mistrustful or competitive actors into a functioning collaboration pattern. It can also help leaders take the invisible into account, ask new questions, design more successful process intervention strategies, and guide collective action. Table 1 shows the possible applications.

Table 1: Application levels of the practice model
(Copyright by the author)

Perspective	Application	Purpose
Strengthening individual leadership competencies for collaboration	Self-assessment, identification of development areas, personal development plans, coaching guide.	Enhance individual holistic leadership capabilities, and the capacity to lead in conjunction with others; increase self-efficacy in creating a field for collaboration.
Empowering collaborative action groups	Group-assessment, identification of improvement areas, team reflection, definition of focus areas, action plans, team coaching guide, meeting planning.	Enhance collaborative core groups' efficacy, refocus core groups on sustainability issues, increase awareness of the interface between hard and soft skills, improve the impact of action plans.
Building communities for change	Assessment and self-assessment of collaboration systems, joint action planning, planning of meetings, workshops and collaboration events; monitoring quality of collaboration; progress reviews,	Engage organization or department or cross-sector network or initiative in driving complex change for sustainability goals, improve collaboration results, strengthen collective action, increase collaborative impact

The methodological approach presented here, referred to as the *Collective Leadership Compass*, suggests that conscious attendance to six dimensions enhances actors' capacity

⁵ The following descriptions draw from previous publications by the author: **Kuenkel, P.** (2016). *The Art of Leading Collectively – Co-creating a Sustainable, Socially Just Future*, Chelsea Green, USA; **Kuenkel, P.** (2015). *Navigating Change in Complex Multi-Actor Settings: A Practice Approach to Better Collaboration*, The Journal of Corporate Citizenship (JCC), Issue 58 on Large Systems Change, Greenleaf Publications; **Kuenkel, P.** (2014). *Navigating Complex Change – How We Can Master the Challenges of Stakeholder Collaboration*. Collective Leadership Studies, Vol 2. Collective Leadership Institute, **Kuenkel, P.**, Schaefer, K. (2013). *Shifting the way we co-create: How we can turn the challenges of sustainability into opportunities*. Collective Leadership Studies Vol 1. Collective Leadership Institute.

for constructive and reliable collaboration in complex multi-actor settings. Table 2 shows the six dimensions and related competencies.⁶ The six dimensions are not new. However, a focus on the way these dimensions are interlinked and related, and an exploration of the positive effects of their *joint* presence on the quality of collaboration, are novel. The interconnectedness of these six dimensions as a recurring pattern of human competencies leads to results that are not simply additive.

Table 2: The six human competency dimensions of the Collective Leadership Compass
(Copyright by the author)

Dimension	Related human competency
FUTURE POSSIBILITIES	Taking responsibility and consciously shaping reality towards a sustainable future
ENGAGEMENT	Creating step-by-step engagement towards building effective collaboration systems
INNOVATION	Creating novelty and finding intelligent solutions
HUMANITY	Reaching into each other's humanness, both the collective experience and individual experience of being human.
COLLECTIVE INTELLIGENCE	Harvesting differences and diversity for progress in dialogue
WHOLENESS	Seeing a larger picture and staying connected to the common good

Application has demonstrated that, in a complex sustainability initiative where this pattern emerged, people were more forthcoming, conflicts could be laid to rest with an acknowledgement of difference, and generally collaboration led to better results in less time (Kuenkel, 2014; 2016). The case examples described in Chapter 6 show how the application of the practice model has contributed to the effectiveness of the multi-stakeholder collaboration process.

In turn, implementation of the practice model combined with observation and research further develops the Compass as a navigating tool to enhance collaboration effectiveness. The practice model is based on 20 years of experience in assisting multi-stakeholder collaboration efforts, backed by research into factors in the success of collective action. These factors and the literature that informed their development will be described in Chapter 6. The literature on systems thinking and leadership that informed the development of the compass dimensions will be discussed later in this chapter.

⁶ A more detailed description of the Compass dimensions and aspects can be found in the Annex 9.3

The following captures the essence of the practice model as it is presented to practitioners:

A summary of the Compass dimensions as they are presented to practitioners

Complex change endeavors start with people considering *future possibilities*. Individuals sense a potential future and begin to develop a vision for a future. Over time the potential grows into a more structured change initiative or even a movement. The dimension of *future possibilities* refers to the human competency to take responsibility and consciously shape reality towards a sustainable future. However, even the greatest visions for change are futile if not enough stakeholders are prepared to commit to action. Effective multi-actor settings therefore require sufficient *engagement* of diverse stakeholders – the powerful and the less powerful, the influential and the affected. Meaningful stakeholder engagement processes create trust and cohesion, invigorate network connections, and foster collective action that leads to tangible outcomes. The dimension of *engagement* refers to the human competency to create step-by-step engagement towards building effective collaboration eco-systems. However, if novelty does not also enter a collaboration system, the process might not move forward but instead merely re-create the actions and behaviors that led to the current situation. Although learning from the past is valuable, it should not limit leaders to creating new variations of existing solutions. The dimension of *innovation* refers to the human competency to create novelty and find intelligent solutions. However, innovation that does not take the shared *humanity* into account can create unsafe environments. Awareness of the human story has both an individual and a collective perspective. Collaboration systems are able to shift towards constructive solutions when there is mutual respect and acknowledgment of the intrinsic value of all people, regardless of different opinions and viewpoints. The dimension of *humanity* refers to the ability of each person to connect to their unique human competency in order to reach out to each other's shared humanity. Increasing awareness, however, requires exchange with others about the actions to be taken. It is clear that life thrives on diversity, and so do human collectives. Meaning-making frameworks, whether offline or online, that are rooted in dialogue between human beings are essential to multi-stakeholder collaboration, if balanced with all other dimensions. The dimension of *collective intelligence* refers to the human competency to harvest differences for progress. All collective moves towards sustainability need to be embedded in people's ability to sense *wholeness*. When leaders are able to distance themselves from any given situation, they are often able to shift to new insights, better understand the coherence of a situation, or attend to the needs of a larger whole. Gaining perspective and seeing a collaborative change effort from within a larger context is a relative, yet important step, in mastering complexity. Leaders are often trained to focus on fragments of reality, on a small fraction of a larger story, or on their own field of expertise. The dimension of *wholeness* refers to the competency to see a larger picture and stay connected to the common good.

Fig. 2 shows the overview of the practice model in a graphic representation.

COLLECTIVE LEADERSHIP COMPASS

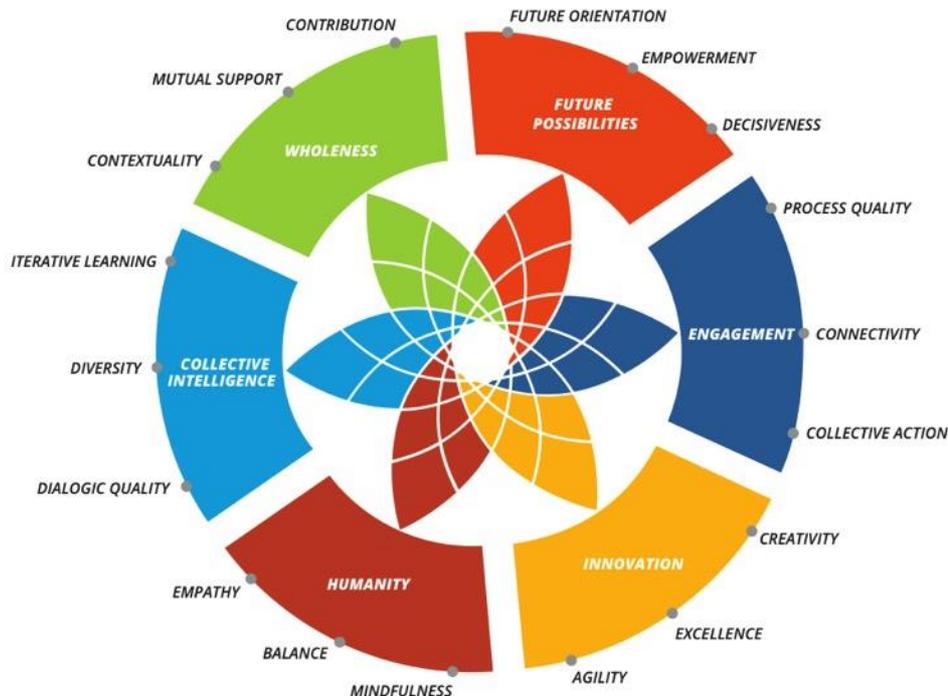


Figure 2: The Collective Leadership Compass⁷

In order to cross-check the six competency dimensions and test the effectiveness of the model, a qualitative study with practitioners from local and international multi-stakeholder collaboration initiatives (Kuenkel and Schaefer, 2013) was carried out. In 2011 and 2012, the author conducted a series of interviews with 30 sustainability practitioners, or people who were engaged in collaborative change endeavors towards sustainability. Among them were innovation experts, coordinators of global sustainability initiatives, experts from standard organizations, corporate sustainability managers from multinational companies, executives from international NGOs, social entrepreneurs, public sector leaders, and youth movement actors. The practitioners addressed goals such as furthering the international application of sustainability standards, pushing company sustainability strategies and sustainable sourcing, creating an international youth network around biodiversity, building a social enterprise for disadvantaged young people, advancing policy changes for environmental regulations, pioneering a sustainable trading initiative, campaigning against dumping chemical waste in Africa, bringing innovation for sustainability on the agenda of the corporate world, building regional capacity for climate change adaptation, supporting national sustainability strategy, managing an internationally active environmental NGO, creating an NGO network in

⁷ Source: Collective Leadership Institute; copyright 2012 by Petra Kuenkel

Southern Africa, teaching sustainability innovation to business leaders, helping CSR managers in companies to strategize implementation, building a pioneering company that produces sustainable goods, implementing a fossil-free energy concept for a company, and opening a company to offer socially disadvantaged people a new perspective. The insights from the interviews were integrated into the practice model (Kuenkel and Schaefer, 2013). The interviewees reflected that success in their initiative hinged on the application of the following strategies:

1. **Fostering trust building** through respect for difference, invigorating passion for the future, and finding common ground. This resembled the importance of enhancing the human competency dimensions of *Humanity* and *Future Possibilities*.
2. **Modeling evolutionary change processes** through a step-by-step engagement of stakeholders and a focus on creating results collectively and ensuring a good flow of communication. This resembled the importance of enhancing the human competency dimensions of *Engagement* and *Collective Intelligence*.
3. **Invigorating connectivity** through developing personal networks that grow into interconnected movements for change, as a contribution to the common good. This resembled the importance of enhancing the human competency dimensions of *Engagement* and *Wholeness*.
4. **Creating patterns of vitality** through enabling collaborative actions characterized by mutual support and ensuring flexible containment of collaborative processes by balancing agreed-upon rules and structures with creativity and the capacity to learn and adapt quickly. This resembled the importance of enhancing the human competency dimensions of *Innovation* and *Wholeness*.

The following sections describe the conceptual thought that had the most significant influence on *Collective Leadership Compass*, during its early development between 2001 and 2007. Table 3 shows the selected literature from each of the conceptual areas, focusing on books and not scholarly articles.⁸

⁸ Much additional literature has been published in the respective thematic areas since 2007. However, the overview in Table 3 only shows the literature exploration that informed the early compass development.

Table 3: Conceptual thought that informed the development of the Compass dimensions
(Created by the author)

Conceptual thought and derived human competency dimensions	Selected sources and themes
Shaping the future - informed the dimension of "Future Possibilities"	<p>De Pree (1992) - Leadership as creating conditions</p> <p>Greenleaf (1977) - The attitude of serving as a prerequisite for responsible leadership</p> <p>Jaworsky (1996) – Looking at purpose-seeking and leadership as a relational interaction.</p> <p>Jones (2000) -The role of enlivenment in leading</p> <p>Isaacs (1999) - Role of seeing leadership as a collective task.</p> <p>Moxley (2000) - The role of vitality in leading</p> <p>Prigogine and Stengers (1984) - The role of uncertainty for shaping future</p> <p>Raelin (2003) - Creating leaders at all levels</p> <p>Senge (1990) - Organizational learning and mental models, future-making as leadership task</p> <p>Senge et al. (1999) – Organizational learning, shaping future collectively, sustaining momentum for collective change</p> <p>Thompson (2000) - The role of meaning in leadership</p> <p>Wiener (1967) - Interconnection between human beings, cybernetics and society</p> <p>Wheatley (1999) - Exploring leadership with emphasis on relationships</p>
Co-designed change - informed the dimension of "Engagement"	<p>Alexander (1979, 2002a) - Space held by centers</p> <p>Capra (1996) - Meaning-making in systems</p> <p>Helgesen (1995) - Inclusion as a core element of participatory leadership, Participatory meaning-making activities create ownership</p> <p>Jacobs (1961) - Role of community identities</p> <p>Kauffman (1996) - The role of self-organization</p> <p>Kleiner (2003) - Power and the engagement of groups</p> <p>Kotter (1996) - The role of alignment in leading change</p> <p>Maturana and Varela (1987) - Structural coupling</p> <p>Mclagan and Christo (1995) - Participation as a new way of shaping realities</p> <p>Morgan (1993) - The role of imagination as identity creator</p> <p>Owen (1999) - Engagement as prerequisite for ownership</p> <p>Prigogine (1996) - Dissipative structures</p>
Finding new pathways - informed the dimension of "Innovation"	<p>Bohm (1980) - The explicate emerging from the implicate</p> <p>Capra (1996) - Life and novelty</p> <p>Cernea (1991) - Ownership and participation</p> <p>Gilligan (1982, 2002) - Emergence of novel thinking</p> <p>Gould and Vrba (1982) - Exaptation and adaptation</p> <p>Holling (1973) - Ever more complex emergence of identities</p> <p>Kohlberg (1976) - Adult development into more complex thinking</p> <p>Scharmer (2007) - Sensing the future</p> <p>Wilber (1998, 2002) - Emergence of complex thinking</p> <p>Zohar and Marshall (1994) - Pools of possibilities with no predictability</p>

Conceptual thought and derived human competency dimensions	Selected sources and themes
Accessing shared humanity - informed the dimension of " Humanity "	<p>Varela (1999) - Perception as co-creator of reality ethical know-how</p> <p>Bateson (2000) - Looking at the mind as ecology</p> <p>Bohm (1980) - Manifest reality arises from thought</p> <p>Capra (1996) - Cognition and knowing as the process of life</p> <p>Fleischmann (1999) - Mindfulness as necessity for responsibility</p> <p>Varela et al. (1992) - Accessing deeper levels of consciousness</p> <p>Isaacs, (1999) - The importance of dialogue or changing interaction patterns</p> <p>Kauffman (1996) - Order and interweaving of entities in nature</p> <p>Luhmann (1990) - Social patterns as shared contexts of meaning</p> <p>O'Toole (1995) - The role of values in leading.</p> <p>Wheatley (1999) - Relationships as core organizing features of life</p>
Meaning-making interaction - informed the dimension of " Collective Intelligence "	<p>Bohm (1996) - The role of dialogue in co-creating realities</p> <p>Buber (1962, 1970) - The importance of dialogue for co-creating worlds together</p> <p>Capra (1996) - Life as interconnected network</p> <p>Capra (2003) - Seeing the world as web of relationships</p> <p>De Liefde (2003) - Traditional forms of dialogue and their importance for leadership</p> <p>Isaacs (1999) - Coherence in collective thinking processes</p> <p>Hesselbein, Goldsmith and Sommerville (Eds.) (1999) - The role of collaboration in leadership effectiveness</p> <p>Sahtouris and Lovelock (2000) - Mutual consistency of holons</p>
Networked patterns of action - informed the dimension of " Wholeness "	<p>Alexander (1979, 2002a) - Degree of life emerging from wholeness and contributing to wholeness</p> <p>Berry (1988, 1999) - Advancing responsibility for sustainability</p> <p>Block (1996) - Redefining leadership as stewardship</p> <p>Bohm (1980) - Reality emerging from the wholeness of an implicate order</p> <p>Elgin (2003) - The role of future thinking as responsible behavior</p> <p>Folke et al. (1996) - Negotiated dynamic balance of functional patterns in nature</p> <p>Jacobs (1961) - Contextual collaboration in mutual support</p> <p>Krishnamurti (1978) - Acknowledging the wholeness of life</p> <p>Macy (1991 a and b) - The role of mutuality as an underlying feature of life</p> <p>Krishnamurti and Bohm (1986) - The existence of an underlying so-called 'one consciousness'</p>

Each of the following headings highlighting the conceptual background encompasses a transdisciplinary body of literature on one conceptual area that informed the compass dimensions.

Shaping the Future

Multi-stakeholder collaboration is a way of forming temporary, goal-oriented systems of human interaction. Because of their temporary nature and their comparatively loose structure, multi-stakeholder collaborations can be seen as catalysts for emerging new ways of collectively shaping the future. They involve creating issue-based networked relationships between participating institutions and individuals. Peter Senge argued that the essence of leadership is "[...] learning how to shape the future. Leadership exists when people are no longer victims of circumstances, but participate in creating new circumstances" (Senge, quoted in Jaworski, 1996, p. 3). For a long time, leadership has been regarded as an

individual capacity. However, this paradigm is shifting as a result of increasing research that sees leadership as a competency of a collective such as a team, the core group of a multi-stakeholder collaboration initiative, or the senior leadership group of a corporation (Kellermann, 2012).⁹ Peter Senge agrees, saying that leadership “[...] is the capacity of a human community to shape its future and specifically to sustain the significant processes of change required to do so” (Senge, 1999, p. 16). The dimension of *future possibilities* is based on Senge’s work, additional literature on leadership (see Table 3), and the personal experience that people are drawn to the potential of making a difference. The human competency dimension of *future possibilities* includes aspects such as *future orientation, empowerment and decisiveness* as important lenses through which a collaboration system can be enhanced or improved.

Co-designing Change

Literature on cooperation and leadership hints at the importance of participation as a way of improving people’s ability to implement that which they have helped to create (Cernea, 1991; see also Table 3). This understanding is crucial to meeting global sustainability challenges, regardless of whether the task is creating responsible supply chains, developing innovative technology for climate adaptation, or coordinating better water resource management. A brilliant example of this is the concept of creating shared value, as outlined by Michael E. Porter and Mark R. Kramer (2011). Multi-stakeholder collaborations not only create learning advantages for the public and private sectors and also conserve time and costs.¹⁰ These savings occur because implementation is eased when people are part of shaping their own future. Combining these insights with the personal experience of the importance of high quality step-by-step engagement in change management, gave rise to defining the dimension of *engagement*. Aspects such as *process quality, connectivity and collective action* are important lenses through which collaboration system can be enhanced or improved.

Finding New Pathways

Jaworski (1996, p. 182) suggested that “[...] the deeper territory of leadership [is] collectively ‘listening’ to what is wanting to emerge in the world, and then having the courage to do what is required.” Scharmer further developed this underlying idea into the concept of the *Theory U*, which is essentially built on the capacity of a group of people to change their structure of attention and subsequently their collective pattern of thought and action (Scharmer, 2007). As individuals and teams carry more responsibility in complex multi-actor change initiatives, this capacity to become collectively inventive grows in importance. A whole body of research and practice has emerged around the approach of design thinking (IDEO, 2008), a methodology that systematically involves a collective in creating novelty. The methodology focuses on diverse perspectives by integrating human, business and technological factors as well as multiple levels of expertise into an interactive process of idea creation, prototyping, and iterative improvement. Together with the personal experience that navigating result-oriented stakeholder collaboration needs both content expertise and entirely new perspectives, this gave rise to defining the dimension of *innovation* with aspects such as

⁹ This will be further explored in Chapter 3

¹⁰ The potential role of multi-stakeholder collaboration will be explored in Chapter 6

creativity, excellence, and agility as important lenses through which a collaboration system can be enhanced or improved.

Accessing Shared Humanity

In their dialogue on 'The Future of Humanity' (Krishnamurti and Bohm, 1986) the Western physicist Bohm and the Eastern metaphysician Krishnamurti explore the assumption that human thought creates divisions between 'me' and 'you' and between 'me' and 'the world'. They suggest that people act on these mental divisions as if they were realities, resulting in polarization, difference, disparity, and conflict in the world. In his lectures on 'Ethical Know-How', Francesco Varela noted that human perception is not the representation of a pre-given external world, but in itself a co-creator of reality (Varela, 1999). Hence ethical expertise, for Varela, is not a skill, which human beings acquire, but a natural state that is unearthed when the layers of obscured consciousness are removed and one begins to see into the very nature of reality. He assumes that freeing this inner disposition unlocks greater empathy with humankind and the world. The dimension of *humanity* is defined on the basis that mutual respect and the acknowledgment of each others' humanness - despite difference in opinion - is a cornerstone of successful collaboration. Aspects of the human competency dimension of *humanity* include *mindfulness, balance and empathy* as important lenses through which a collaboration system can be enhanced or improved.

Meaning-Making Interaction

All systems, including multi-stakeholder collaboration systems, need to balance their autonomy with the rules and relational patterns of the larger system of which they are part (Sahtouris and Lovelock, 2000). This balance applies to actors within a multi-stakeholder collaboration, and to a collaboration system in relation to other initiatives. A key to negotiated balance is diversity, which in nature is a crucial requirement for a resilient system. The greater the diversity, the more sustainable a system becomes over time. Similarly, multi-stakeholder collaboration initiatives are built on internal relationship patterns as well as a shared context of meaning (Luhmann, 1990) sustained by continuous conversations. Many authors (Berry, 1999; Elgin, 2001; Capra, 2003) have argued that in order for what can be considered collectively meaningful to emerge in dialogue and deliberation, diversity must be seen as an asset and endeavors must belong to the collective. The importance of dialogue in quality communication has long since been adopted in the corporate world (De Liefde, 2003; Kuenkel, 2004; Isaacs, 1999; Wheatley, 1999; Jaworski, 1996). Together with the personal experience that navigating complex change, in multi-actor settings, requires space for structured dialogue, this body of literature forms the basis for the dimension of *collective intelligence* with aspects such as *dialogic quality, diversity* and *iterative learning* as important lenses through which a collaboration system can be enhanced or improved.

Networked Patterns of Action

Natural (including human) systems relate through relational patterns ordered as networks, with constant internal communication (Capra and Luisis, 2014). Multi-stakeholder collaboration can be best understood as networked action (Waddell, 2011) that recognizes power differences between actors rather than falling into hierarchical relationships. Consequently, the structure supporting co-creation should consist of a networked composition of actors, with differences in power, expertise and influence, rather than the

layered organogram typically found in organizations. In practice, functional collaboration systems seem to emerge when a common identity had been sufficiently developed in the context of a pattern of mutual support. Thus, tools that support navigation of complex change need to mirror patterns of referential relationships. The most relevant conceptual approach, found in the work of Christopher Alexander (2002a), depicts structured patterns, which create aliveness.¹¹ Alexander suggests that the vitality (or life) of a given space is the result of the composition of what he calls 'centers.' Centers are elements of structure in a given space that interact and influence each other. In practice, this conceptual approach suggested that areas of people's attention in a collaborative space could also function as a pattern, and could subsequently be fostered by guiding attention in a holistic way to increase collaborative effectiveness. The six dimensions might be conceptualized as centers of attention to the whole, as well as defining the dimension of *wholeness* with the aspects *contextuality*, *mutual support* and *contribution* as lenses through which a collaboration system can be enhanced or improved.

The initial literature review has suggested a deeply human capacity to consciously act and reflect as a collective. This dissertation argues that multi-stakeholder collaboration within the global sustainability agenda requires many more actors to become more knowledgeable about how to best utilize these capacities. The *Collective Leadership Compass* suggests one way of building this capacity, by attending to these six dimensions over time. Although the dimensions themselves are not new, what is new is paying attention to their *joint* presence as a relational pattern in the diagnosis and planning of complex change in multi-actor settings for sustainability transformation. In practice, this was experienced as having a positive effect on the quality of collaboration. Attention to the compass dimensions invigorated vitality and human competencies in collaboration systems, resulting in an increased collective competency to navigate complexity in an integrative and inclusive way. The successful practice leads to the following central research question:

How can the practice model, the Collective Leadership Compass, be conceptually anchored in a systems view of life, and how could new insights from systems thinking, the recent advancement in the sustainability discourse, and the narrative inquiry into the experience of transformation leaders be incorporated towards the development of a framework for leading large-scale transformative change collectively?

The central research question generates the following research sub-questions:

- I In view of the transformative and complex change envisaged in the SDGs, which recent advancements in the global transformation discourse underscore a systemic understanding of leadership as the transformative capacity of a collective of distributed actors across institutions?
- II What are essential features of living systems that not only enhance resilience and vitality in natural systems, but also further life-enhancing co-creation for sustainable

¹¹ This will be explored in Chapter 4

collective action in human systems? In what way are these features relevant for leading transformative change?

- III How can the practice model be anchored in the essential features of living systems and how do these features show up in complex multi-stakeholder collaboration processes?
- IV How could integrating the features of living systems, experiences from complex multi-stakeholder collaboration, and conclusions from narrative interviews with transformation leaders complement the practice model and be further developed into a conceptual architecture for leading transformative change collectively at scale in global transformation projects with multiple actors?

Chapter 2:

2 Methodology and Approach

Research is always a developmental journey and an expression of one's own mental focus. It is by nature selective and subjective, because it reflects the researcher's perception of the world and interests at the time of the research (Fox-Keller, 1996). The researcher, in fact, participates in the object of her research. She tends to develop a relationship with the content, which both shapes the content in a new way and changes the researcher by exposing her to new insights (Macy, 1991a; Fox-Keller, 1996). But as much as a research focus is a consciously chosen way of explaining reality, it is also an attempt to draw on previous research and empirical information as clearly and objectively as possible. A certain degree of involved detachment creates an opportunity for the scientific material or the empirical data to take on a dynamic of their own. However, from a constructionist perspective, there is no objective detachment. Instead, the structured and often collectively created construction of useful knowledge recognizes (and makes transparent) the situated context from which the knowledge and insights arise.

Social constructionism can be seen as a continual emergence of dialogues rather than a stable theory. It highlights the relational interaction between people and emphasizes that the co-creation of reality and the perception of existing reality are both anchored in social relationships. Hence, both science and transformative practice are co-constructed in relational networks forming around geographical and mental contexts. Understanding reality in the form of meaning-making is a result of such relational processes (Gergen, 1994). Research from the perspective of social constructionism (Gergen, 1999; 2015) can therefore be seen as a form of a metanarrative that asks not only *what is true*, but also *what is useful for co-creating the future*. Any research is also a creative process (Strauss and Corbin, 1990). It tends to follow a movement of creation that is like other natural creative processes in living systems (Sahtouris and Lovelock, 2000) or deliberate innovative processes that generate new prototypes of knowledge from existing thought.

This research is anchored in the insight that the current global challenges invite knowledge production that can help humankind co-create the future in a different way. It is deliberately forward-looking and focuses on the potential of the practice model for leading transformative change collectively. As Gergen (2015) suggests it has been designed for creative construction. Moreover, research, even literature reviews and conceptual development of constructs, is always to a certain extent collaborative action because it creates new connections between existing knowledge streams. The research therefore follows three underlying assumptions:

First, the research acknowledges the fact that the global sustainability challenges have multi-faceted causes related to complex interactions of human behavior (Future Earth, 2013). In their proposal for a new research agenda that would reflect the global challenges, Bai et al. (2016) propose that any research that aims at paving humankind's transformative pathway into the future needs to integrate natural and social sciences as well as the humanities in an entirely new way. The authors also suggest the need for a new relationship between science

and practice. They state:

Knowledge production needs to better reflect the changing reality, and a rapid cycle that links knowledge and actions is required. The traditional linear model of knowledge production and adoption where knowledge is produced by academia and then applied in society is insufficient and ineffective in addressing major societal challenges for the futures (Bai et al., 2016, p. 359).

The authors argue for a closer link between the academia and other form of knowledge generation. “Therefore it essential to establish effective mutual learning and feedback mechanisms between science and practice; both science learning from practice and building knowledge to inform practice are needed here” (Bai et al., 2016, p. 360). The complexities inherent in sustainable development mean that pathways to overcome these challenges must come from a multidisciplinary and transdisciplinary approach. While emphasizing a systems view of life (Capra and Luisi, 2014), this dissertation draws on literature from different bodies of knowledge such as social sciences, politics, economics, philosophy, physics, ecology, psychology, and management literature. It seeks to integrate these different knowledge streams to elucidate the conceptual systemic foundations of a model for leading transformative change collectively. Conceptual deep dives into these bodies of knowledge will take up a substantial part of this research, and aim to explore new ground.

Second, the research narrows the gap between research and practice in institutions such as governments, corporations and organizations that are tasked to deal with global challenges at scale. Again, Bai et al. (2016), note: “In terms of learning from practice, particular attention might be paid to the role of front-runners in innovative sustainable practices and experiments at different levels, and how to upscale them” (p. 360). Following these suggestions, the dissertation takes up the topic of innovation as an important enabler for sustainability transformations (Leach, Scoones and Stirling, 2010) and will focus on selected case examples of successful multi-stakeholder collaboration processes as learning laboratories for systemic change.

In particular, it emphasizes the **practice of leading transformative change across institutions in complex multi-actor settings**. This is also the practice base from which the research has emerged, and the experiential background of the practice model introduced earlier. This dissertation suggests that this specific field of experience in implementing multi-stakeholder collaboration for issues of common concern around sustainability challenges holds knowledge that can inform conceptual approaches to large system change. It argues that a better integration of practice and science could potentially contribute to better decision-making, planning, and implementation of transformative change (Bai et al., 2016). Hence, the research explores the relationship between the *collective leadership practice model* developed by the author based on 20 years of experience in successful multi-stakeholder collaboration and the conceptual deep dives discussed above. It creates connections between systemic foundations, factors in the success of multi-stakeholder collaboration presented in two case examples, and the prototype of the collective leadership practice model.

Third, this research contributes to an emerging discussion on research as future-forming world-making (Gergen, 2015). In his award-winning article, Gergen argues that most science

has functioned as a mirror of current and past realities. He advances a conception of research that is concerned with future possibilities, when he asks: “What if we replaced the persistent rush to establish “what is the case” and began to ask, “what kind of world could we build?” (Gergen, 2015, p. 294). In his view, this shift would place values, the *what for* of research activities, at the center of attention. Possibilities of a future world can be imagined. The Global Agenda 2030 for a “Future We Want” is testimony to an orientation toward the future grounded in the views of many stakeholders around the globe. Gergen (2015) suggests that research can and should be ‘future-forming’. It should explore ‘current and emerging practices’ (p. 298) as they might lead to the emergence of a new consciousness if properly highlighted.

The notion of a creative social construction of practice knowledge (Hassan, 2014) informs this dissertation. Iterative learning spurred by 20 years of practice in navigating complex multi-stakeholder settings towards tangible results for sustainability underlies this research. But it also aims to go beyond practice. Following Gergen’s proposal that research should contribute to ‘altering’ (Gergen, 2015, p. 299) the future, this dissertation aims at providing a new perspective on **leading change as the transformative capacity of a collective**. It proposes an entirely new way of looking at reality based on a systems view of life. It is future-forming in the sense that it integrates theory and knowledge from practice with the tested prototype of the practice model to suggest a framework for looking at leading, or, as it will be proposed later, **stewarding**, complex change towards transformation. As a result, it hopes to contribute to more successful collaborative action and an improved capacity of collectives of actors to drive the transformation the world needs.

In that way, the research suggests a departure from a more traditional form of knowledge generation. Traditionally, knowledge is produced in a linear fashion, and then tested or applied to social practices (Bai et al., 2016). This research deliberately meanders between conceptual thinking and reflection on practice experiences, incorporating both inductive and deductive approaches to the main research question. It is also abductive in the sense that it attempts to interpret observed realities that cannot easily be explained by existing theories. Moreover, this dissertation suggests conclusions that are meant to be forward-looking towards a new research agenda. It thus aims at contributing to better-functioning learning cycles between science and practice, or knowledge and action (Bai et al., 2016; Burns, 2015). This is particularly important, as the current global challenges require rapid learning (Future Earth, 2013; 2014). This aims to advance systemic research and change practice in addressing the current world challenges around the 17 Sustainable Development Goals. Fig. 3 provides an overview of the research process. The overview also shows how the different chapters relate to the research sub-questions, abbreviated as R I to IV, discussed in Chapter 1.

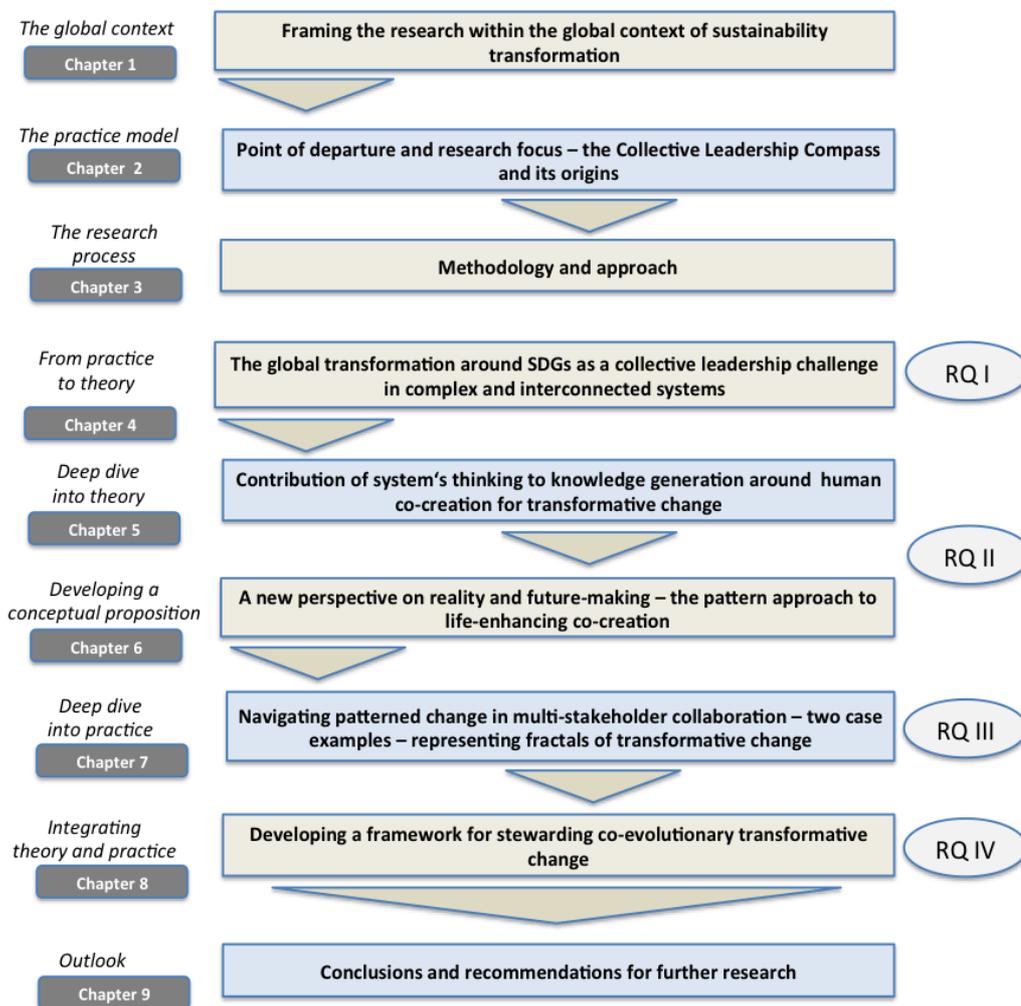


Figure 3: Overview research process

The **introductory chapter** described not only the current state of the world, but also global efforts to advance behavioral change towards sustainability and subsequent collective action at all levels of the global society.

Chapter 1 introduced the practice model and its empirical and conceptual origins. It summarized research results from 30 interviews with actors, who had been chosen because they were involved as coordinators, facilitators, or organizers in complex collaborative change processes for sustainability. The chapter highlighted how insights from the interviews, experience from advising more than ten multi-stakeholder collaboration initiatives¹², and conceptual deep dives into systems theory have informed the development of the practice model, the Collective Leadership Compass. Taking the practice model as a

¹² This includes the following selected multi-stakeholder initiatives: The Sustainable Textile Alliance Germany; German Sustainable Cocoa Initiative (GISCO); Global Seafood Sustainability Initiative (GSSI); Water Futures Partnership (WFP); German Food Partnership (GFP); German Arabic Water Sector Network; The Common Code for the Coffee Community (4C); WE Project for sustainable textiles; Public Private Partnership for Occupational Health and Safety; African Cashew Initiative.

starting point, the following chapters address the central research question developed in Chapter 1:

How can the practice model, the Collective Leadership Compass, be conceptually anchored in a systems view of life, and how could new insights, from systems thinking, the recent advancement in the sustainability discourse, and the narrative inquiry into the experience of transformation leaders be incorporated towards the development of a framework for leading large-scale transformative change collectively?

This central research question is broken down into several research sub-questions. While **Chapter 2** documents the methodological approach, Chapters 3 to 7 address distinct sub-questions, and Chapter 8 suggests a synopsis of research results as well as recommendations for further research. The following sections explain the chapters in more detail.

Chapter 3: From Practice to Theory

The global transformation around SDGs as a collective leadership challenge in complex and interconnected systems

Chapter 3 is explorative in the sense that it sets the scene for understanding transformative change in the context of sustainability as a leadership challenge. It explores the current leadership discourse with a focus on collectives and reviews the discourse on global transformation. It identifies where these discourses point to leadership as the transformative capacity of a collective of distributed actors across institutions. The chapter responds to the first research sub-question:

I In view of the transformative and complex change envisaged in the SDGs, which recent advancements in the global transformation discourse underscore a systemic understanding of leadership as the transformative capacity of a collective of distributed actors across institutions?

Chapter 3 analyzes the current for the topic most relevant academic and practice discourse on transforming the world with regards to the need to lead change collectively at all levels of the global society. Drawing on both the practitioner and the academic discourse on transformation to sustainability as well as the emerging discourse on leadership as the capacity of a collective, it identifies the underlying thread as systems thinking. It argues that a paradigm shift towards a radically new way of seeing reality based on a systems view of life is needed in order to conceptualize leading transformative change for sustainability. This leads to the next chapter.

Chapter 4: Deep dive into systems theory

The contribution of systems thinking to conceptualizing leadership for transformative change

Chapter 4 briefly introduces the emergence of systems thinking and reviews literature that emphasizes a systems view of life (Capra & Luisi, 2014). It does so from different angles in a trans- and multidisciplinary way. Special focus is placed on emerging discussions of a systems view of life-enhancing processes. The chapter introduces the role of patterns as a relational and constituting element in the co-creative process of life, and relates such constituting elements to vitality and resilience, as a form of aliveness, in living systems. It

argues that transferring and translating the insights of this approach to understanding how socio-ecological systems function (or fail to function) is key to conceptualizing leading transformative change in a new way. The chapter investigates how selected literature on systems thinking draws from living systems and life-enhancing co-creation to understand transformative change. In doing so it addresses the second research sub-question:

II What are essential features of living systems that enhance vitality in systems and further life-enhancing co-creation for sustainable collective action in human systems? In what way are they relevant for leading transformative change?

The chapter ends by summarizing preliminary conclusions on how concepts of patterns and aliveness as an essential feature of living systems may inform a better understanding of life-enhancing co-creation for sustainable collective action.

Chapter 5: Contributing to an emerging theory

A new perspective on reality and future-making – how ‘patterns of aliveness’ can inform approaches to life-enhancing co-creation

Building on the previous chapter, **Chapter 5** suggests a new perspective on reality and future-making. It takes the concept of patterns of aliveness in living systems as a foundation for conceptualizing ways of leading transformative change collectively. It argues that approaches to navigating complex world-making and transformative change for sustainability are more effective when they are anchored in a profound understanding of life processes. This approach could lead to more consciously constructive human-to-human as well as human-to-nature interactions. The chapter develops the metaphor of ‘partnering with the wisdom of life processes’ as a pathway to sustainability. Based on the deep dive into the systems view of life in Chapter 4, Chapter 5 advances 14 propositions regarding essential features of life-enhancing systems that could inform an understanding of life-enhancing human co-creation for sustainable collective action. It suggests a further answer to research sub-question two.

II What are the essential features of living systems that enhance vitality in systems and further life-enhancing co-creation for sustainable collective action in human systems? In what way are they relevant for leading transformative change?

The 14 propositions drive this chapter’s contribution to an emerging theory of ‘patterns of aliveness.’ It identifies six essential organizing principles that allow life to emerge, thrive, and re-create itself in natural as well as social systems. Chapter 5 suggests that these principles - in their relational interaction - create a pattern, which positively influences the vitality and resilience, or the degree of aliveness, of a living system. It argues that these principles must be taken into account in the practice of leading transformative change towards sustainability.

Following David Bohm’s (1980) cautious thoughts about the development of theory, these six organizing principles are elaborated in the form of a conceptual framework termed the emerging ‘patterns of aliveness’ theory. This theory understands relational interaction in socio-ecological systems as a key contributor to life-enhancing co-creation. Hence, the six organizing principles are less an explanation of reality than a new way of looking at reality in patterned compositions. It is argued that this insight could inform the practice of leading transformative change. The chapter also relates the organizing principles to the current

discourse on transformation for a sustainable world, suggesting that the emerging 'patterns of aliveness' theory could be leveraged for large-scale systems transformation.

Chapter 6: Deep dive into practice

Navigating complex change in multi-stakeholder collaboration: two case examples that illustrate complex transformative change

Chapter 6 takes the insights gained so far and investigates how to translate the emerging 'patterns of aliveness' theory developed in the previous chapters into the day-to-day management practice of leading transformative change in multi-actor settings. It seeks to answer the research sub-question:

III. How can the practice model be anchored in the essential features of living systems and how do they show up in complex multi-stakeholder collaboration processes?

The chapter argues that methodologies that support transformative change need to inform a practice of stewarding multiple 'patterns of aliveness' from individual to large system levels. It suggests that navigating such complex change with multiple actors requires attending to human competencies that currently exist and to nurturing or invigorating new competencies. It explores how the practice model, the Collective Leadership Compass, is anchored in the emerging 'patterns of aliveness' theory and, in particular, how the six competency dimensions of the practice model relate to the six organizing principles of the Compass. This relationship will be captured in an additional layer of the conceptual framework supporting the emerging 'patterns of aliveness' theory.

Moreover, the chapter briefly highlights insights on collaborative change from the current body of literature on multi-stakeholder collaboration and argues that this emerging practice represents a possible pathway to transformative change. It introduces two examples of collaborative change processes with multiple actors, one at a local level and the other at an international level. Both case examples of transformative change are analyzed through the lens of the practice model as well as the emerging 'patterns of aliveness' theory with its six organizing principles. The chapter concludes with the insight that leading transformative change at the breadth and scale needed for transformation to sustainability requires actors to learn how to build well-functioning collaboration systems of cross-institutional actors. It suggests that collaboration is more effective when it enhances both the sense of aliveness of individual and the 'patterns of aliveness' within a system of actors.

Chapter 7: Integrating theory and practice

Developing a conceptual architecture for stewarding co-evolutionary transformative change

Chapter 7 takes the insights about the need for stewarding 'patterns of aliveness' in functional collaboration systems from the practice in complex multi-stakeholder settings into the realm of large systems change. It argues that translating the aliveness enhancing organizing principles into approaches to planning and evaluating complex change can greatly enhance the effectiveness of intervention designs and collaborative initiatives for transformation to sustainability. In that way, the chapter addresses the fourth research-sub-question:

IV How could the integration of the living systems features, the experiences from

complex multi-stakeholder collaboration and the evaluation of narrative interviews with transformation leaders complement the practice model and be further developed into a conceptual architecture for leading transformative change collectively at scale in global transformation projects with multiple actors?

Chapter 7 suggests four shifts in thinking toward a new way of approaching large systems transformation that takes into account the aliveness enhancing organizing principles developed in Chapter 5. It summarizes the insights from 50 semi-structured research inquiry conversations with scholars and practitioners in the global sustainability arena. These research conversation partners were chosen on the basis of their engagement with overcoming global sustainability challenges. The inquiry conversations partly employed a structured interview design, but also took place as explorative conversations during conferences and gatherings.¹³ This chapter uses insights from these conversations and recent scholarly literature to describe important, yet often insufficiently linked intervention approaches to sustainability transformation. Using the emerging 'pattern of aliveness' theory developed in Chapter 5, Chapter 7 suggests a way of integrating these sustainability transformation approaches with the aliveness enhancing principles and the practice model to generate a new overarching layer of a conceptual framework – a conceptual architecture for leading transformative change collectively. It shows how stewarding co-evolutionary 'patterns of aliveness' might be designed in transformative ways in large systems change. This is illustrated using an example of large system change – the Finland's Roadmap to a Circular Economy. The chapter concludes that an overarching conceptual architecture for leading transformative change could potentially support multiple actors in collectively developing more effective process designs for large systems change.

Chapter 8: Synopsis and outlook

Chapter 8 summarizes the preceding chapters and shows how the research questions have been answered. The conclusion suggests further research into the capacity of cross-institutional collectives of actors to steward transformative change.

¹³ See Annex 9.2: Types of research inquiry partners and summary of results

Chapter 3:

3 Global Transformation as a Collective Leadership Challenge

Chapter 3 is explorative in the sense that it sets the scene for understanding transformative change in the context of sustainability as a leadership challenge. It explores the current leadership discourse with a focus on collectives and reviews the discourse on global transformation. It identifies where these discourses point to leadership as the transformative capacity of a collective of distributed actors across institutions. The chapter responds to the first research sub-question:

I *In view of the transformative and complex change envisaged in the SDGs, which recent advancements in the global transformation discourse underscore a systemic understanding of leadership as the transformative capacity of a collective of distributed actors across institutions?*

Chapter 3 analyzes the current relevant academic and practice discourse on transforming the world with regards to the need to lead change collectively at all levels of the global society. Drawing on both the practitioner and the academic discourse on transformation to sustainability as well as the emerging discourse on leadership as the capacity of a collective, it identifies the underlying thread as systems thinking. It argues that a paradigm shift towards a radically new way of seeing reality based on a systems view of life is needed in order to conceptualize leading transformative change for sustainability.

In an article on the role of human beings as the emerging greatest force in nature, Steffen, Crutzen and McNeill (2007) define the term Anthropocene as a period in which

[...] the Earth has now left its natural geological epoch [...]. Human activities have become so pervasive and profound that they rival the great forces of Nature and are pushing the Earth into planetary terra incognita. The Earth is rapidly moving into a less biologically diverse, less forested, much warmer, and probably wetter and stormier state (p. 614).

This shift was assumed, or predicted, by scientists and philosophers as early as the beginning of the last century (Vernadsky, 1998, reprinted from 1926; Crutzen, 2002), with the insight that humans' increasing influence on the planet might result in a critically endangered biosphere. Already in 1926, the Russian biologist and geologist Vernadsky suggested that the future evolution of the planet was dependent on "increasing consciousness and thought, and forms having greater and greater influence on their surroundings" (Vernadsky, 1998, as quoted in Steffen et al., 2007, p. 615).

The connection between human consciousness and patterns of thought and action has been explored by scholars from various disciplines, not only philosophers (Teilhard de Chardin, 1999; Krishnamurti, 1978; Krishnamurti and Bohm, 1986) and cognitive scientists (Maturana and Varela, 1980), but also biologists (Weber, 2013), and physicists (Bohm, 1980; Zohar and Marshall, 1994). Consciousness influences human behavior and, through the development of technology, the composition of entire socio-ecological systems. Bai et al. (2016) emphasize that the term Anthropocene has raised awareness that humans are responsible for the planet as a whole. One aspect of this awareness focuses on the risk that this emerging sense of responsibility will not grow quickly enough to induce a change in human behavior. Another aspect is the awareness that human-made technology has the power to change the entire planetary socio-ecological system in an unprecedented way. Risk and opportunity move closer together; for example, moving beyond the threshold of planetary boundaries might spark spiraling dynamics (Rockström et al., 2009; Steffen et al., 2015a; 2015b) with effects that are difficult to imagine and complicated even for computer modeling (Siebenhüner and Barth, 2005).

The Intergovernmental Panel on Climate Change (IPCC, 2014) has stated that the future global environment will, for better or worse, be the result of global human decisions and collective actions. Others assume that humankind's technological talent will overcome the challenges of today's world (Steffen et al., 2007). Some take the stance that moral behavior should be grounded in humankind's ability to more deeply understand its entanglement with the whole earth system as a vast biological network (Weber, 2013) or suggest that only a shift in thinking, in the form of a 'global citizen movement' will spur collective action for a transformation (Raskin, 2016, p.iii). The World Social Science Report (ISSC and UNESCO, 2013) emphasizes the role of the human capacity for reflective practice and creativity as reflexive agents of transformative change. Steffen et al. (2007) suggest that stewarding the balance of the earth system will become humankind's task for many decades if not millions of years to come. The authors note that "to develop a universally accepted strategy to ensure the sustainability of Earth's life support system against human-induced stresses is one of the greatest research and policy challenges ever to confront humanity" (Steffen et al., 2007, p. 618).

Many predictions of life-threatening future scenarios (e.g. Meadows et al., 1972; Guilding, 2011) have been fiercely criticized or ignored. However, the turn of the century has also seen a growing global consensus that simply continuing with environmental degradation and unbalanced economic growth patterns would indeed endanger humankind's place and possibilities on planet Earth. This recognition initiated the lengthy negotiation process around the 17 Sustainable Development Goals (SDGs). While these goals may not be revolutionary in their approach, or as yet transformative, they at least constitute the first global agreement that takes a global perspective on collectively managing evolutionary change. Hence, the challenges that many authors have assessed as serious evolutionary crises may at the same time serve as a necessary push in the development of human awareness of global responsibilities. The SDGs may not solve all global challenges, but they could function as a handrail for stewarding and orchestrating the behavioral change that the planet so urgently needs. However, it is suggested here that beyond the linear planning approach currently

guiding SDG implementation, the unpredictability of the Anthropocene's effects calls for a paradigm shift towards a widespread collaboration between multiple stakeholders (OECD, 2015), as well as a deeper understanding of how evolutionary change processes work.

The term Anthropocene also stands for an acknowledgment that all planetary inhabitants and their material relatives are dynamically interconnected. The speed of emergent phenomena such as biodiversity loss or climate change hints at the magnitude of humankind's behavioral and mental influence on planet Earth (Crutzen, 2002). Although sustainability and transformative change in socio-ecological interaction systems have been clearly identified as a future research challenge (Future Earth, 2014; Hamilton, 2013; Hackman and St Clair, 2012), current human decision-making processes at global and local levels are bounded in institutions and nations that operate within a limited frame of impact, which makes it difficult to respond to the globality of the challenges. Scholars involved in the Earth System Governance Project¹⁴ suggest seven major adjustments to the current system of global governance, including strengthening the UN's environmental program, calling on all governments to close regulatory gaps, placing the concern for social and planetary health at the center of economic development, and creating greater transparency of political and economic issues for citizens (Biermann et al., 2012). Other scholars take a different point of view, suggesting that such an approach would leave the underlying paradigm of global development unchallenged (Meadows, 1999). They argue for a more radical shift in thinking and behavior. Such a shift needs to rearrange existing path dependencies, change the currently operating negative feedback loops that endanger the planet, and lead to a more profound transformation (Goepel, 2016; Waddell et al., 2015; Folke, Carpenter, Walker, Scheffer, Chapin and Rockström, 2010; Foucault, 1982). Instead of emphasizing incremental or reform-oriented change, they suggest looking at "potential discontinuities, emergent patterns of change and plausible and desirable futures" (Bai et al., 2016, p. 352). In their view, this implies both risk and opportunity; if people were more widely aware of the concept of the Anthropocene, there might be a greater acknowledgement of the key role and responsibilities of humankind, which could subsequently spur a radical shift in behavior.

As an upcoming Report by the Club of Rome suggests (Weizsäcker and Wijkman, 2017) many attempts towards such a transformation are taking place. An increasing number of solutions for a more sustainable world have already been advanced by individuals, groups and communities, though they are often fragmented, disconnected and operate in niche areas (Burns, 2015; Finidori, 2016; Le Blanc, 2015; Murphy and Bendell, 1997). The shift towards taking responsibility for transforming the world has not yet reached mainstream thought or influential institutions. There are deliberate moves to make the global goals a voluntary, yet morally binding framework for each nation's plans and activities towards sustainability, and complex monitoring systems are being developed (Le Blanc, 2015; Tagar

¹⁴ The project is embedded in a 10-year social science-based research program under the auspices of the International Human Dimensions Programme on Global Environmental Change (IHDP), Science and Implementation Plan of the Earth System Governance Project (Working papers, Earth System Governance, 2009). Source: www.earthsystemgovernance.org, accessed on 15th April 2017

et al., 2016). But it is not clear whether the necessary changes can be pushed forward with the same level of action that caused the complex global challenges. Although many experts and scholars have called for a paradigm shift in thinking and acting (Finidori, 2015; Fullerton, 2015; Jaworski, 1996; Scharmer and Kaufer 2013; Senge et al., 2015; Wheatley and Kellner-Rogers, 1996), the essential question – what will advance the widespread paradigm shift that is needed to accelerate the necessary changes in behavior? - has not yet been answered (Fullerton, 2015; Godfray et al., 2010; Meadows et al. 2004; Meadows et al., 1972). Meadows called the dominant paradigm in a society “the shared idea in the minds of society, the great big unstated assumptions—unstated because unnecessary to state; everyone already knows them—constitute that society’s paradigm of deepest set of beliefs about how the world works” (Meadows, 1999, p. 17). Korten (2015) suggests that there is a need for an entirely new story that puts the well-being of people and the planet center stage. Fullerton (2015) advances the notion of responsible and regenerative capitalism, while Donaldson and Walsh (2015) propose that, given the enormous influence corporations have on the world, it is time to redefine the true meaning of business as creating collective value. An article in the Harvard Business Review (Porter and Kramer, 2011) sparked an ongoing scholarly and practitioner discourse on shared value creation as a corporate strategy to create business value that at the same time creates social value by collaborating with civil society organizations. Pirson and Lawrence (2015), Lovins (2012) and Pirson (2012) urge a new narrative that counteracts the dominant neo-liberal paradigm focused on markets, individuality, competition and acceleration of growth. They argue that such a new narrative could drive change in institutions around the world, based on a new worldview that is systemic and holistic. These authors further suggest that it is time to interlink evolving scientific discourses in systems theory, neuroscience, biology, quantum physics, psychology, and economics to focus on how human interaction and organization can better face the challenges. Capra and Luisi (2014) suggest that we do not need to invent sustainable human communities from nothing; rather, we can learn from nature by observing how and when sustainable ecosystems emerge and maintain themselves. For them, a sustainable human community is one that is designed so that its ways of life, businesses, economy, physical structures, and technologies do not interfere with nature’s inherent ability to sustain life. They suggest that the first step into a paradigm shift is the willingness to understand how nature creates and sustains life. Knowing how the evolutionary process is organized, for them, is the cornerstone for creating a conceptual link between ecologically and humanly sustainable communities. They argue that both human and natural systems must be seen as “living systems exhibiting common principles of organization” (Capra and Luisi, 2014, p. 353). This proposition will be taken up in the deep dive into living systems theory in the next section.

In the world of business and management education, organizations like the Globally Responsible Leadership Initiative (GRLI¹⁵) are supported by large multinational companies and geared towards changing management education to view the needed transformation of the world as a leadership challenge (GRLI, 2008). But this reconceptualization of the role of

¹⁵ See: The Globally Responsible Leadership Initiative (<http://www.grli.org>)

leaders and decision-makers vis-a-vis the global challenges is still far from becoming mainstream. A Google search conducted in August 2016 returned 754 million hits for the search term “leadership,” 2.4 million hits for “sustainability leadership,” and 5.7 million hits for “leadership for sustainability.” Although there is an emerging discourse on sustainability leadership for a sustainable world (Kuenkel, 2016; Metcalf and Benn, 2012), it is disconnected from the academic discourse on global transformation. Hardly any scholars writing on sustainability conceptualize global sustainability challenges as leadership challenges for governments, businesses, civil society organizations, and citizens. But there is a growing body of research and literature on leadership approaches that move beyond individualistic notions of leadership limited to organizational contexts. A few selected examples of this literature will be explored later. Metcalf and Benn (2012) state that the challenges of sustainability call for leaders that display extraordinary abilities, and are capable of navigating change in complex adaptive systems. Leaders need to be complexity-literate, engage others as they lead with uncertainties, and display high degrees of agility and adaptability. Other discourses on leadership and ethics (Bass, 1998; Knights and O’Leary, 2006; Kuenkel, 2008; Maak, Bennis, Parikh and Lessem, 1996) suggest that leaders, no matter their position, have a special obligation and an almost undeniable responsibility beyond the initial functional task orientation. They need to be conscious about how they enact reality. Still, such approaches focus on individual leaders.

In an article on sustainability leadership in communities Fullan (2004) suggests that the focus needs to be on the system of actors involved in sustainability transformations, as it is the “increase of purposeful interaction among individuals” (Fullan, 2004, p. 4) that will cause change. A similar shift in the locus of attention can also be found in approaches to relational leadership (Uhl-Bien and Ospina, 2012), shared leadership (Gronn, 2002; Hausschildt and Kirchmann, 2001), collective leadership (Friedrich et al., 2009; Kuenkel 2015; Pór, 2008; Scharmer and Kaufer 2013) and systems leadership (Collier and Esteban, 2000; Senge et al., 2015). The following section will therefore look at the emerging discourse on leadership as the capacity of a collective.

3.1 The Emerging Discourse on Leadership as the Capacity of a Collective

When leadership first became the subject of research and theorizing, the focus was clearly on studying the individual leader (Bennis, 1994; Burns, 1978; Drucker, 1992), mainly those in corporations. This leadership literature assumes that the term “leader” refers to individual people who guide and direct a course of action, set organizational structure, and support goal achievement. They are seen as influential in the sense of driving change processes and pushing or enabling people to achieve purposeful, agreed-upon goals. Leadership is usually seen as an activity that takes place within the boundaries of an organization, and most often in a hierarchical relationship between leaders and followers (Helgesen, 1995).

In recent years the field has broadened beyond investigating the individual traits of leaders to include the context of leadership, or the relationship between leaders and followers or peers in particular settings (Bass and Avolio, 1993; Boerner, Eisenbess and Geisser, 2007; Burns,

1978; Allen, Stelzner and Wielkiewicz, 1999). It also started to include studies of leadership issues in the public domain, in non-profit organizations, and in communities (Ospina et al., 2012). This new direction incorporated cultural issues, diversity issues, and perspectives on shared or distributed leadership (Gronn and Salas, 2004). A growing body of work explores the distribution of leadership roles (Gronn, 2002; Hiller, Day and Vance, 2006; Pearce and Sims, 2002). Boone and Hendricks (2009) addressed collaboration between leaders with diverse expertise in top management teams. They found that adequate exchange of information and openness to decentralized decision-making had a positive effect on the overall organizational performance. Carmeli and Schaubroeck (2006) also found that functional collaboration based on good information exchange is a prerequisite for the success of leadership teams that are diverse in expertise and experience. Hence research on the interplay between leaders and the people directly or indirectly related to them in organizational endeavors has recognized that leadership does not take place in isolation (Day, Gronn and Salas, 2004; Schriesheim, Castro and Cogliser, 1999; Taggar, Hackett, and Saha, 1999).

The global dynamic around large system change has arrived on the agenda of leadership research in the form of a discourse on complexity (Lichtenstein et al., 2007; Uhl-Bien, 2006; Uhl-Bien et al., 2007). This recent discourse seriously questions the directing role of a leader, and incorporates cutting-edge theory that sees leadership as a systems intervention without clear control over the outcome (Lord and Brown, 2004; Senge et al., 2015). Understandings of leadership have become more complex as they view leadership both as an individual and simultaneously a joint activity aimed at bringing forth reality and creating new circumstances at various levels, from individual to organizations to societal change. This perspective moves the relational aspect of leading into the foreground (Avolio and Luthans, 2006; Hosking, 2007; Uhl-Bien and Ospina, 2012). It suggests that leadership must be seen as patterned relational occurrences between those entitled to lead and their so-called followers (Avolio et al., 2009; Graen and Uhl-Bien, 1995; Uhl-Bien and Ospina, 2012). The question of collectivity in leadership has gradually moved onto the agenda of leadership studies, not only in the sense that leaders have an effect on collectives, but also in the sense of a systematic inquiry into how outcomes of leadership efforts are the result of a collective of actors leading them (Carroll and Teo, 1996; Pearce and Conger, 2003). This dissertation therefore suggests a conceptual shift in the approach to leadership from the focus on individuals and their skills and capacity to the understanding of leadership as the capacity of a collective of actors (Table 4¹⁶).

Friedrich et al.'s (2011) technical report for the US Army Research Institute suggests a framework to help understand collective leadership *within* an organizational context as "the selective and dynamic emergence of individuals whose skills and expertise are most appropriate to a given situation" (Friedrich et al., 2011, p.1). In their definition, it is "a dynamic leadership process in which a defined leader, or set of leaders, selectively utilize skills and expertise within a network, effectively distributing elements of the leadership role as the situation or problem at hand requires" (Friedrich et al., 2011, p. 1). This framework suggests

¹⁶ Revised from Kuenkel and Schaefer (2013)

a patterned effect of collective leadership composed of four elements: certain key constructs for collective leadership (such as communication, networks, and performance parameters), the leadership capacity of individuals, the outcomes, and the context. Friedrich et al. (2011) list 55 propositions that demonstrate how the patterned interaction between these components effects the overall capacity for collective leadership. They argue that “collective leadership is not a single ‘effect’ or simple causal chain. Rather, it is a pattern of effects and a system of interactions” (Friedrich et al., 2011, p. 5). They conclude by suggesting a comparison between the notion of collective leadership and the way information is conveyed in the human brain. Collective leadership invigorates neuron-like networks, so a team operating in a collective leadership fashion should be more effective and agile in leading change (Friedrich et al., 2011, p. 39) than a team operating in a more traditional leader-follower setting. Contractor et al. (2012) developed a different framework in the context of network methodologies. These authors explore how leadership and influence operate as a social network, and suggest three structural aspects that function together as a pattern: (1) the leadership set-up as leaders, followers and their relationship, (2) the roles determined by functions and purpose, and (3) the process or time. They suggest further studies of these core dimensions.

Both frameworks, however, leave out decisive questions of the *purpose* of collective leadership. Hence, they remove the phenomenon of collective leadership from any emotional engagement and place it in a value-free context. However, in light of the urgency of global issues, it is suggested here that *collective leadership* must be conceptualized differently. Specifically, it must be placed in the context of understanding the *who*, the *how* and the *what for* of leadership towards transformative change in the implementation of the SDGs across hierarchical and institutional boundaries. The capacity of a collective to lead transformative change cannot be separated from the purpose of the transformation. Hence, this dissertation views the intention to make a difference for the betterment of all as an inherent component of the collective leadership endeavor.

Some scholars in the leadership arena have touched on the intentionality of leaders as a driver of success (Chalofsky and Krishna, 2009; Goldman Schuyler, Baugher and Jironet, 2016). Goldman Schuyler et al. (2016) suggests that leading towards a healthy world requires “focusing people’s intention on how to sustain and nourish...dynamic living systems” (p. 438). A systems view of life has gradually found its way into management and leadership theories and in particular into the field of change management in the business and corporate arena (Wheatley, 1999; Wheatley and Kellner-Rogers, 1996). More and more business leaders are becoming aware that the current economic system’s interdependent complexity and volatility drive global environmental destruction and weakening ties among social groups (Capra and Luisi, 2014; Fullerton, 2015). Leadership as the capacity of cross-institutional actors to lead system change is discussed by literature on global action networks (Waddell, 2011), multi-stakeholder collaboration (Biermann et al, 2012; Kuenkel, 2015), and social change organizations (Uhl-Bien and Ospina, 2012). Attempts to embed leadership within a view of organizations as life-modeling have been made in the practice field of organizational development (Bernstein and Linsky, 2016; Laloux, 2014). These attempts highlight the importance of meaning and purpose in the sense of a responsibility for a larger whole as a

driver of successful collective leadership endeavors.

Table 4: The shift in conceptualizing leadership in complex collaborative change
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FROM:	TO:
Leading change is seen as the capacity of the individual only	Leading change becomes the capacity of a collective
Silo approaches and competitive thinking dominates.	Collaboration becomes the norm. Actors drive their interest and the greater joint purpose.
Leadership is seen as taking place in a hierarchical context only.	Leadership takes place in non-hierarchical and co-operation contexts . No actor has discretionary power over other actors.
Leadership is seen as the delivery of goals through enlisting followers.	Leadership is understood as the joint delivery of agreed-upon common goals in a climate of collective responsibility . All actors contribute according to their expertise, role and resources.
The focus of leadership tasks is goal attainment only, while the common good is not necessarily in focus of leadership.	Leadership and goal attainment is seen and enacted as a contribution to the common good . What the common good is and how to get there is negotiated among all actors. Existing structures (laws and regulations) define the boundaries.
Leadership positions are clearly distinguished from followership.	Depending on expertise and experience leadership and followership are interchangeable .
Leadership development focuses on growing individual leaders .	Leadership development takes into account the success factors for collective action .
Dialogue and co-operation are side issues or add-ons.	The capacity of a leadership collective to ensure outcome-oriented dialogue and future-oriented collective action becomes a decisive success factor. Such a collective can be a loose structure of actors driving change together, or can develop into a multi-stakeholder governance structure (such as steering committee, councils etc.).

Senge et al. (2015) describe a dilemma in the study of leadership for transformative change. In their view, many actors who drive transformative change intend to cultivate a spirit of collective leadership. Because of their cultural context and its fixation on leadership as the capacity of an individual, however, they “remain firmly anchored to the myth of the heroic individual leader” (Senge et al., 2015, p. 28). The authors therefore coin the term ‘system leadership,’ which is brought about by collective leadership that catalyzes and stewards systemic change at scale. They point out an interesting phenomenon, when they say:

The health of the whole radiates to nurture similar commitment in others. Their ability to see reality through the eyes of people very different from themselves encourages others to be more open as well. They build relationships based on deep listening, and networks of trust and collaboration start to flourish (p. 28).

The authors show that when a collective of actors developed openness for change, intractable problems could be shifted, and actors were able to see the larger context as well as the embeddedness of their action. This would mean that an initial focus on self-interest

could shift into contributions towards collective value. The increasing ability to overcome challenges that Senge et al. (2015) describe could be interpreted as an indication that systems composed of many different actors have a greater potential for resilience, vitality, or thriving, as Russell (2013) puts it. Senge et al. (2015) conclude: "Transforming systems is ultimately about transforming relationships among people who shape those systems" (p. 29).

It is suggested here that the relational aspect of leadership and its proposed effect on the problem-solving capacity of a collective of actors require more in-depth exploration. It identifies a need to explore how the capability to transform systems, and the functionality of a system of collaborating actors who lead collectively, are connected with issues of vitality in human systems. It suggests, on the one hand, a focus on leadership as the capacity of a collective to lead transformative change. On the other hand, it explores how the capacity of a collective to enhance vitality in their human collaboration systems can impact systems and help them work more effectively. This dissertation examines, how collective leadership in multi-actor settings can enhance the functionality of human interaction systems and thus contribute to the aliveness of human systems, the surrounding context, and ultimately the natural environment. It proposes to redefine the historic shift into the Anthropocene and its attendant focus on human impact on the planet Earth as a **global leadership challenge**. This is not meant in the sense that heroic leaders are called for (Bennis, 2007; Dutton, 1996), but rather the opposite. The unprecedented, interconnected, and complex dynamics of humankind's influence on the planet call for a new field of science and practice exploration, as well as a bridge between academia and the practice of leading change (Bai et al., 2016; Burns et al., 2015). As there is an obvious need to lead the transformative change at all levels of the global society (Boerner, Eisenbess and Greisser, 2007; Crossan, Vera, and Nanjad, 2008) many actors will need to take up leadership tasks. **Leadership, in this context, is seen as purposeful human agency that involves an entrusted, attributed, or acquired position of power and influence in hierarchical or non-hierarchical settings (De Hoogh and Den Hartog, 2008). Leading transformative change in multi-stakeholder collaboration is seen as the capacity of a collective of actors, composed of individuals representing different organizations or institutions, equipped with collaborative capacity, and with an intention of making their joint contribution to a world in transition count (Kuenkel, 2015; Senge et al., 2015).** Such a view must examine how multiple leaders enact change in large systems, with or without coordination. This research suggests that the growing practice of multi-stakeholder collaboration in global and local sustainability initiatives is a laboratory for a new approach to leading large systems change for transformation (Bäckstrand, 2006; Kuenkel, 2015; Kuenkel, 2016; Schumacher and Feurstein, 2007). The deep dive into practice in Chapter 6 will take up this suggestion.

Leading transformative change does not take place in isolation. It is increasingly clear to all actors that the global Sustainable Development Goals can only be implemented in a global partnership between all three sectors of the global society – governments, corporations, and civil society organizations. Moreover, the context conditions and the way people *act together* set the tone and impact of the change endeavor. As the SDGs state, there is a need to partner for change, or to *lead collectively*, not only across sectors and institutions, but also at different implementation levels from local to global and among leaders from very different walks of life (Hanleybrown et al., 2012; Kania and Kramer, 2011). The transformation of the

world suggested by the SDGs, can thus be captured as a *collective leadership* challenge. Collaborative change endeavors in complex multi-actor settings will become the norm and an integral part of the day-to-day management of change in corporations, governments, and civil society organizations. Hence, leading transformation in the form of navigating complex change in multi-actor settings (Kuenkel, 2015) will presumably become a requirement for actors in leadership positions across the board.

A key leadership challenge in an uncertain, unpredictable, and complex change endeavor like the global transformation is reaching agreement among multiple stakeholders on aspirational guiding goals, while acknowledging that the details of arriving at these goals may differ according to context, circumstances, preferences, culture and capability (Knoll, Grosse-Puppenthal and Mackie, 2015). As mentioned before, Capra and Luisi (2014) argue that a more in-depth understanding of the organizing principles behind the way living systems enhance and maintain life may also provide promising insights for organizing transformative change towards sustainability in human systems. Such insights may even inform an understanding of leading transformative change by connecting aspiring issue-related goals and distributed collective action. This dissertation takes these propositions as an entry point for looking at a common underlying thread that connects the above discourses: a living systems view of life.

A perspective that views the world as a vast interconnected system in constant interaction and highly interdependent has slowly moved toward the center of different scholarly discourses, including the literature on global transformation, earth governance, multi-stakeholder collaboration, and to some extent leadership. All these discourses refer to systems, although they use different variations of systems theory. Bai et al. (2016) summarize this trend:

In terms of understanding the major trends and underlying dynamics, we need to realize that the Anthropocene is changing the co-evolutionary pattern between humans and the environment - from an emphasis on local interaction to a coevolution of humanity and the planet as a whole. Such trends and patterns are the results of underlying drivers and societal dynamics, and require a shift away from deterministic single trajectory of future thinking towards exploring multiple trajectories and futures (p. 10).

This quote serves as the starting point for a deeper dive into the realm of systems thinking. In particular, it invites a focus on those streams that take a deliberate stance on a systems view of life and advance the perception of life and evolution as relational and patterned occurrences. A deeper understanding of recent insights into a systems view of life provides helpful in more constructively navigating the complexity of transformation for the future of humankind.

3.2 Advancing a Systems View for Leading Transformative Change Collectively

This chapter has framed global transformation around the 17 Global Sustainable Development Goals as a collective leadership challenge in complex and interconnected

systems. It showed how the conceptualization of leadership has gradually shifted to incorporate collectives of actors in their relational interaction as agents in sustainability transformation. It proposed an understanding of world-making as a matter of individual and collective sense-making, a matter of interaction and communication (between humans and between humans and the rest of life), and a matter of individual and collective human agency. All three aspects of enacting the future are intertwined and require further exploration. In that context, the chapter suggested looking at the SDGs not only as a challenge for technical and political implementation, but also as an invitation to operate with a systems view of life in a spirit of collective leadership. This could potentially advance new thinking and practices. In Chapter 4, this dissertation will therefore take an extensive deep dive into a systems view of life as an essential foundation for the notion of 'leading transformative change collectively' as a way of approaching complex change for transformation. It will particularly focus on understanding life-enhancing patterns in systems.

Chapter 4:

4 A Living Systems Perspective for Leading Transformative Change

Deep dive into a systems view of life

The contribution of systems thinking to conceptualizing leadership for transformative change

Chapter 4 briefly introduces the emergence of systems thinking and reviews literature that emphasizes a systems view of life (Capra & Luisi, 2014). It does so from different angles in a trans- and multidisciplinary way. Special focus is placed on emerging discussions of a systems view of life-enhancing processes. The chapter introduces the role of patterns as a relational and constituting element in the co-creative process of life, and relates such constituting elements to vitality and resilience, as a form of aliveness, in living systems. It argues that transferring and translating the insights of this approach to understanding how socio-ecological systems function (or fail to function) is key to conceptualizing leading transformative change in a new way. The chapter investigates how selected literature on systems thinking draws from living systems and life-enhancing co-creation to understand transformative change. In doing so it addresses the second research sub-question:

II What are essential features of living systems that enhance vitality in systems and further life-enhancing co-creation for sustainable collective action in human systems? In what way are they relevant for leading transformative change?

The chapter ends by summarizing preliminary conclusions on how concepts of patterns and aliveness as an essential feature of living systems may inform a better understanding of life-enhancing co-creation for sustainable collective action.

The global challenges mentioned in Chapter 1 and elaborated in Chapter 3 are not simply projected, but real. They have an everyday effect on many actors. The different ways they manifest, as poverty and inequality, climate change, civil and cross-border war, food insecurity, inadequate health care, educational disparities, weak governance, and environmental degradation, make it difficult to look at them holistically. Yet, human agency for change counts at all levels. Positive scenarios for evolution acknowledge that human agency can result in conscious choices to act differently within the complex systems of which people are part and which they can influence. For this reason, a shift in thinking and consciousness may accelerate the transformation required. Goepel (2016) talks about 'radical incremental transformation' that results from a new purposeful human interaction and that gives rise to diverse, sometimes even small, interventions, which then start to interact in favor of a transformative path.

Small incremental change can aggregate to systems change (Hinrichs and Kangas, 2003). According to Geels et al. (2015) transformation requires "co-evolutionary changes in technologies, markets, institutional frameworks, cultural meanings and everyday life

practices” (Geels et al., 2015, p. 2). Hence, large-scale transformation can only be the result of different human actions at scale – probably at a scale that cannot be controlled or even coordinated. Meadows (1999) assumes that whoever succeeds at intervening at the level of paradigms may find the pathway to transform systems. In her view “paradigms are sources of systems. From them, from shared social agreements about the nature of reality, come system goals and information flows” (Meadows, 1999, p. 18). She emphasizes that the way people perceive the *nature of reality* informs their feeling, thinking and acting. Hence, she considers this perception of reality to be the cornerstone of human agency. Capra and Luisi (2014) suggest that perceiving reality in a different way could become a conscious guiding force in driving transformative change at scale. They argue that deepening perceptions of the life process is crucial for humankind’s future. The following section sketches the emergence of a systems view of life and highlights the schools of thought most relevant for anchoring the conceptual foundation of leading collectively in systems thinking.

4.1 The Emergence of a Systems View of Life

A systems view of life can be traced back to early systems theory at the beginning of the last century (Capra and Luisi, 2014; Mele, Pels and Polese, 2010) when advances in psychology, biology, ecology, and quantum physics suggested that research on living systems needs to understand organisms as interactive networks. Systems theory proposed that a focus on matter and structure needed to be complemented by a deeper understanding of process, patterns, organizations, and relationships (Capra and Luisi, 2014; Jackson, 2003). Inquiry moved from the parts to the whole (Checkland and Holwell, 1998; Weinberg, 2001). Since then, different streams of systems theory in biology, mathematics, physics, and the social sciences have merged but also diverged. All share the foundational belief that that the world cannot be understood by (only) investigating its components, but rather requires a more holistic perspective.

The first generation of systems researchers was concerned with understanding the ability of systems to maintain a dynamic balance (Bertalanffy, 1968). It advanced the general idea that patterns of organization were a key characteristic of life. This was particularly emphasized in the cybernetic approach (Wiener, 1948, 1965). The next generation of scholars advanced the notion of self-organization by looking at how systems (both living and non-living) develop structure from seemingly disorder (Prigogine and Nicolis, 1977). Systems thinking was also transferred into the social arena (Luhmann, 1984). Other scholars further developed this approach by defining self-making or autopoiesis as a central characteristic of living systems (Maturana and Varela, 1975; 1980; 1987; Varela and Maturana, 1974). *The Santiago Theory of Cognition*, developed by Maturana and Varela (1980), proposes that all living systems are cognitive systems and that the process of life is essentially a process of cognition in which a living system couples to the environment in recurrent actions that disturb the system and thus induce structural change. This idea was complemented and further explored by consciousness studies (Damasio and Dolan, 1999; Edelman and Tononi, 2000; Tononi, 2005), which suggested that consciousness and matter are interconnected and in constant mutual transformation (Zohar and Marshall, 1994). Scholars inspired by the *Santiago Theory of Cognition* integrated Buddhist scholarship into their understanding of living systems (Macy

1991a; 1991b). Varela, in particular, introduced the notion of value into systems thinking, when he came to the conclusion that ethical know-how is not acquired, but deeply embedded in the nature of human consciousness (Varela, 1999).

Towards the end of the last century scholars in the field of ecology employed a systems view of life to model ecosystems as networks enmeshed with multiple communicative feedback loops. Even more radical was the idea that the planet is one integrated self-regulating living system (Margulis, 1998). The Gaia Theory (Lovelock, 1995) proposes that living organisms continuously interact with inorganic matter on Earth. Lovelock suggested that earth's myriad subsystems form a complex, self-regulating system of synergistic effects, which is the foundation of maintaining life on earth and which ensures the conditions for its survival. This approach sees the human community as part of this self-regulating system (Berkes, Folke and Colding, 2000). However, humans can also move the whole system so much out of its delicate generative balance that recovery or regeneration would take place at high biological and human cost (Grimm et al., 2000). The view that living systems are self-organizing interconnected interdependent networks has been taken up by complexity theory (Stewart, 2002), chaos theory, and fractal geometry, all of which advanced understandings of non-linear dynamics in both living and non-living systems (Hilborn, 2000).

The architect and systems theorist Christopher Alexander introduced the concept of the *degree of life* as an important perceivable feature of living and non-living systems (Alexander, 2002a). He claims that sentience is an underestimated and under-researched concept, and that it is essential to understand how it guides the perception of degrees of life in physical space. Recently the biologist and philosopher Andreas Weber (2016) has proposed that the feeling of aliveness, and the urge to maintain it, is an irreducible sensation that every living being (not only human beings) experiences. Weber claims that living entities have intentionality and seek to create meaningfulness around their existence (Weber, 2013, p. 30). Meaning is becoming a focus of neuroscience and brain research, as researchers seek to understand how organisms (not only human beings) bring forth meaning and construct their world accordingly (Damasio, 1989; Fuchs, 2009). Some of these approaches to systems thinking will be explored further, as they ground the conceptual foundation of the practice model, the Collective Leadership Compass as a guiding structure for leading transformative change.

A systems view of life is increasingly used in the emerging discourse on sustainability leadership (Capra and Luisi, 2014; Fullerton, 2015; Hargreaves and Fink, 2004). But the translation of the mostly non-linear world of systems thinking, with its particular language, into the world of leadership that is determined by linear thinking and respective terminologies, has not yet fully yielded concepts, approaches, models and instruments that help navigate the complexity of a systems approach. It is not yet clear how insights about living systems dynamics and the process of evolution can inform the way people lead, orchestrate, and steward the needed complex transformative change at various levels of the global society and in multiple collectives of multi-actor settings. **What is therefore needed can almost be seen as bridging work or the 'translation' of the non-linear world of systems thinking into the linear world of planning** (Capra and Luisi, 2014; Holmes, Scarrow and Schellenberg, 2012). Systems thinking must be appropriately simplified to help navigate world-making towards better outcomes for all without inappropriately trivializing or

reducing complexity (Fiss, 2011).

In an attempt to further this ‘translation’ work, this dissertation focuses on a specific emerging knowledge stream in the vast field of living systems. This emerging and still fragmented knowledge stream advances the hypothesis that a profound and widely adopted shift towards a systems view of life needs to look at **the way life, systems, and evolutionary processes can be described as composed of multiple, yet discernable, patterns that if arranged (naturally or intentionally) in a certain way, can further the degree of life or aliveness in a particular space.** The emphasis here is not on a fixed structure or physical properties arrested at a particular moment, but on a continuously dynamic, relational interaction between properties that affects time, space, and above all, collective human agency. This way of looking at the nature of reality sees life as an **interconnected, co-evolutionary and purposeful sea of increasingly complex relational patterns with an inherent tendency of generating and maintaining negotiated aliveness for the parts and the whole** (Alexander, 1979; 2002; Finidori, 2016; Weber, 2013, 2016).

In view of Bai et al.’s (2016) suggestion that more research should consider the potential of co-evolutionary patterns, this deep dive will therefore focus on those concepts from systems thinking that may provide a promising avenue for understanding patterns as an important constituent in the evolution of life. Such an understanding has the potential to greatly contribute to anchoring an approach to leading transformative change in a new understanding of the nature of reality. The deep dive is structured as a two-step knowledge building process.

First, it explores the concept of *patterns* as a key constituting element for the way life emerges, evolves, disintegrates and regenerates. Following the transdisciplinary approach, it will do so from the perspective of (1) cognition theory, (2) biology/ecology, and (3) architecture. The insights derived from each of these explorations are captured in preliminary conclusions regarding relevant aspects for conceptualizing leading transformative change collectively.

Second, it explores scholarly thoughts on the role of sentience, or a subjective *feeling of aliveness*, as a basic feature of living organisms (Weber, 2013, 2016), and relates sentience to functional and dysfunctional patterns of interaction in living systems and to the reintegration of linear and non-linear thinking. Again, the insights derived from this exploration are captured in preliminary conclusions on their relevance to conceptual foundations for leading transformative change collectively, and for approaching transformation towards sustainability in a new way.

4.2 The Pattern Approach to Understanding Life Processes

The intuitive search for patterns of life that generate vitality and resilience in human and natural systems - from individuals to communities to societies to the planet - is probably as old as humankind. The term ‘pattern’ has a variety of meanings that are interesting to explore in this context. Most frequently, patterns are described as design structures (as in art) that are visible and may or may not please the eye. They are also seen as ordered natural or artificial layouts, as in architecture or landscapes. But patterns also describe behavior of

animals, human beings, and other living organisms, individually or in communities, or even structures of thought. In this way, they describe an ordered sequence of properties that exist in discernable, repeated, and most importantly meaning-creating relationship with each other. The Merriam Webster dictionary describes the term pattern as a “repeated form or design that is used to decorate something; the regular and repeated way in which something happens or is done; or as something that happens in a regular and repeated way”¹⁷. Seeing the world in patterns, today, seems rationally unfamiliar, as the human mind is more concerned with things, objects and facts than with something as abstract as a description of the relationship between objects or facts (Cummins, 2000; Hayek, 1942). Yet, a pattern only exists if there is a repeatedly enacted and interactive relationship between objects, properties, elements, thoughts, or actions (Margolis, 1987).

Speaking of patterns emphasizes the *relational aspect* of an arrangement, a constellation, a composition, a co-construction, or a co-creation. The eye, the mind, and the intuition are able to discern this relational aspect, and its effect on the observer, and hence it is called a pattern. But at the same time, perceiving patterns as ordered sequences or displayed structures is part of day-to-day intuitive perception: for example, people who are similar like each other; one resonates emotionally with beauty or with a certain music; people are able to predict behavior because they have recognized a behavioral pattern in other people in the past; people trust or mistrust an organization or a person as a result of a pattern of communication or behavior that was recognized in the past; and so on. Hence, the perception of patterns, as invisible or visible, yet recognizable, order is part of an experience of reality (Wheatley, 1999).

In his book Mind and Nature, Gregory Bateson (1979, p. 8) looks for ‘patterns that connect’ when he asks: “What pattern connects the crab to the lobster and the orchid to the primrose and all four of them to me? And me to you?” As an anthropologist, he invites readers to look at content and relationship and at how human beings create interaction patterns that give rise to certain ways of life and not others. Patterns have also emerged as an increasingly important field of study and application in artificial intelligence as well as software development (Gabriel, 1996), as it has become a branch of machine learning. Hence, in computational science the term ‘pattern recognition’ has developed since the 1960s (Jie et al., 2006). It is the cornerstone for recent technological advancements such as automated driving, big data integration, and disease prevention (Bishop, 2006).

However, the focus of this dissertation on ways to collectively lead transformative change towards sustainability deliberately leaves out mathematical, computational and health-research related approaches to *pattern recognition*. In fact, it will avoid the term altogether. The reason for this is that reviewing approaches to pattern recognition shows that patterns are often perceived as static in the sense of being a snapshot of a particular moment in time. The emphasis is more on the structural arrangements of certain properties, and not on the relational interactions and the co-construction that emerges in a patterned occurrence. This may sound like a minor issue, but in fact it is central in the context of the dissertation, where patterns are relevant only insofar as they help actors to understand the dynamic of systems

¹⁷ See: <http://www.merriam-webster.com/dictionary/pattern>, retrieved on 8th August, 2016

with regard to sustainability transformation (Bai et al., 2016).

It could be vitally important for actors tasked with leading transformative change collectively to be 'pattern literate;' well-versed in identifying patterns that enhance life on the planet to a greater or lesser extent, or patterns of interaction among people or between people and nature that function better or worse. To this end, the following sections trace selected origins of the emerging knowledge stream around looking at living systems as well as human interaction systems as patterned occurrences. They approach the concept of patterns from the three perspectives: cognition theory, the ecosystems approach, and the architectural pattern language approach (Alexander, Ishikawa and Silverstein, 1977). The purpose of this literature review is to understand how the insights drawn from these knowledge streams impact the way people view the nature of global leadership challenges, and how this could subsequently inform the way leaders, decision-makers, and agents of change steward transformative change in nature, the world and human interaction **as patterned interactions**.

4.2.1 Pattern Cognition as the Process of Life

The Chilean neuroscientist Humberto Maturana along with Francisco Varela constructed the model of autopoiesis to describe the basic self-producing and self-maintaining feature of living organisms in physical space (Maturana and Varela, 1987). According to this model, the components of a living system are not stable; rather, they continuously transform or 'make themselves'. They do not make themselves independently of the whole that connects them to the other components. Instead, each transformation reflects a transformation in the relationship environment. In this way components enter into a process of 'making' each other, and so the entire network continually 'makes itself' (Maturana and Varela, 1987). The network is continually produced by its components and in turn produces its components. "In a living system," Maturana and Varela (1980, p. 7) write, "the product of its operation is its own organization." **The central insight of their Santiago Theory of Cognition is that it links cognition, the process of knowing, with the process of life itself.** Cognition, according to Maturana and Varela (1980), is the activity involved in the self-generation and self-perpetuation of living systems (Varela et al., 1991; Capra, 1996, 2003). **Cognition embraces perception (recognition), emotion (meaning or sense-making), and behavior (agency).** Maturana and Varela (1980) argue that, at all levels of life beginning with the simplest cell, mind and matter as well as process and structure are inseparably connected. Any living system, such as a person, our skin, a hypothalamus, or a cell, is to be regarded as a cognitive system. For a living being to be alive it has to create and re-create itself, and to sustain and transform itself.

In the Santiago Theory of Cognition "mind and world stand in relation to each other through mutual specification or dependent co-origination" (Varela et al., 1992, p. 150). **The structure of reality, the world people perceive, is created through cognition and in turn structures cognition – living organisms recognize structural patterns and co-create them.** The organizing activity of living systems at all levels can be seen as a continuous mental learning activity, so that life and cognition are inseparable (Maturana and Varela, 1980). Learning defines the existence of the mind and occurs in each system capable of

forming feedback loops, and feedback loops are found in the simplest organisms capable of perception and thus of cognition.

In the theory of autopoiesis (Maturana and Varela, 1987) two features of a system are relevant to its constitution: organization and structure. The term organization, in their view, describes the configuration of relationships between components that make up the *identity* of a system. Structure refers to the *components and the relations* between them that realize a system. Whatever happens in a system is determined by this causal relationship, described by the authors as *structural determination*. In their view, the actual course of change in a system is influenced or determined by its structure rather than only by direct influence of its environment. **Hence, the behavior of a system is neither erratic, free, nor completely a result of choice, but a result of and constrained by its patterned constitution.** But this constitution is not fixed. It is continually changing, adapting, adjusting, and unfolding. While a given influence from outside (perturbation) may 'trigger' a change of the system, the change as such is a function of the system's own organization and structure. Structural determination does not imply that all interactions are predetermined. It rather describes the fact that the range of possibilities for change is limited and constrained or enabled by system patterns developed over time. **This is an important realization for the issue of transformation to sustainability. It mirrors the current situation, in which possibilities for changes in human thinking and behavior exist, yet they are constrained by deeply embedded historical and cultural structures of thought, organization, and action that must be acknowledged.**

Maturana and Varela use the term 'structural coupling' (1987, p. 75) to refer to the structure-determined (and structure-determining) engagement of a system with its environment or another similar system. Structural coupling has connotations of both coordination and co-evolution. ***In a complex setting, the participating sub-systems reciprocally serve as sources of compensable perturbations for each other.*** Such interactions are 'perturbations' in the sense that they trigger a direct or indirect effect of change without penetrating the boundary of the affected system, but they may cause learning and a shift in the overall pattern (Maturana and Varela, 1991). They are 'compensable' in the sense that there is a range of possible 'compensations', which have a limit beyond which each system ceases to be functional as a whole. Each iteration of any reciprocal interaction is affected by all interactions before. In that way, structurally coupled systems have a kind of interlocked history of structural transformations (Maturana and Varela, 1991). **They emerge as patterns with a patterned history.**

Depending on the composition of the patterned structure not every environmental disturbance causes responses in the system. Systems reach a certain degree of robustness or resilience. The networked pattern structure, in accordance with its pattern history, forms its own criteria of perceptive limits and applies selection criteria of selectivity to determine whether to respond to a particular disturbance. It may, for example, select meaning and purpose (Weber, 2013, 2016) as directional guidance for its own survival. **The entire patterned network responds to a selected disturbance by rearranging its patterns of connectivity.** Even though each structural coupling triggers changes in the living system, its pattern of organization maintains its overall consistency - **the system remains organizationally autonomous throughout the continuous changes of its structure. It**

shows resilience. Thus, throughout its history of structural changes, the organism maintains a unifying structural pattern, which makes up its identity - the organizing principle of the system (Capra and Luisi, 2014).

In this view of cognition, the criteria guiding the responsiveness of a system also determine the boundaries within which the system responds to its environment in a self-maintaining and self-making way. If a disturbance goes beyond these limits, the organizational patterns may need to change excessively, the system's ability to connect and restructure may be overwhelmed, its flexibility may be overburdened, and the whole system may collapse because its structure would not be able to withstand the disturbance. This aspect of Maturana and Varela's (1987) theory of cognition has striking parallels to the increasing recognition that the 'perturbations' caused by the hazardous effects of the Anthropocene, in their dysfunctional pathway of structurally coupled 'self-making', can also lead to a systems collapse that would greatly impact humans.

In the Santiago Theory of Cognition, living organisms as living systems 'bring forth a world' through the process of pattern cognition (Capra, 1996; Capra and Luisi, 2014); in other words, they co-create futures. For this to happen, perturbations are important. The system specifies which perturbations from the environment trigger structural changes (or changes in the pattern) and in that way the system specifies a world it will bring forth in co-creation. **But it is also important to realize that patterns are never stable; they are self-transforming, adjust, and adapt.** They also have a high degree of agility (Finidori, 2016). In addition, systems are nested in larger systems and in communion with other systems, and they recognize similar patterns. Similar patterns imply similar worlds brought forth, and the ability to communicate, understand and create together (Finidori, 2016). Communication means to bring forth worlds with others of the same kind. In interaction and communication, particularly when feeling is involved, systems become part of each other's field of existence and begin a path of co-ontogeny (Pask, 1992). "If they fit, one with respect to the other, then they form a path of (structural) drift. Within this co-ontogenetic drift new phenomena will arise immediately" (Kenny, 1989, p. 1).

The way this co-creation takes place depends on the nature of interactions, but also on the history of the patterned structural set-up of individuality and collectivity. In a strict interpretation of Maturana, drift does not imply a situation without choice. Rather, it simply describes a situation in which structural coupling allows something like a drift to happen together as an inevitable co-evolution that occurs in congruence beyond control and steering (Maturana and Mpodozis, 2000). This drift could also be referred to as 'negative path dependencies' (Goepel, 2016), a constellation of factors, patterned behaviors, and structural effects that come together and continuously drive patterns into a certain direction. **The sustainability challenges of the world display many of these seemingly difficult to influence path dependencies that create continuously worsening patterns. Yet, at the same time, pathways of dysfunctional patterns in such a co-ontogeny might be shifted through more conscious collective co-creation. If not, leading transformative change would not be possible.**

4.2.1.1 Preliminary Conclusions for Leading Transformative Change

The Santiago Theory suggests the following implications for integrating a systems view of life into novel approaches to leading the transformative change the world requires.

Conclusion 1:

More conscious cognition of patterns is an important leverage for leading transformative change.

The process of cognition, which is seen by Maturana and Varela (1980) as the constituting process of all life, can be at least partially conscious. This means, **a discourse about the cognition of patterns and their influence on future-forming is possible – individually and collectively.** In the process of cognition, meaning or sense-making and (collective) agency are inseparably intertwined as part of the same ontogenetic pathway; perception and co-creation belong together. **Approaches to leading transformative change need to enhance the ability of actors to cognize patterns in order to discern which ones further the future of humankind and the planet and which ones hinder it. This can only happen by integrating data such as objective facts, subjective collective sense-making and more conscious and co-creative collective agency.**

Conclusion 2:

Co-ontogenetic drifts or negative path dependencies can be reversed or changed by conscious choice.

The co-ontogeny and the drifts Maturana describes as inescapable and uncontrollable may provide a useful description of the state of the world. This view attaches logic to what are in other contexts termed wicked problems, intractable challenges, negative path dependencies, or destructive run-away-loops (Maturana and Mpodozis, 2000). It is still an open question whether conscious attention to the logic and structural history of such patterns could change the path of the downward-spiraling co-ontogeny. Korten's (2015) proposal for a *new narrative* of a living economy or Weber's (2013) suggestion to build economies on the premises of *enlivenment* are opening the discourse on how far collective stories and interpretations of current and future realities can reverse negative path dependencies. Only this would open opportunities for leading transformative change. Maturana's strictness regarding inescapability of patterned drifts remains to be challenged.

Conclusion 3:

Collective learning processes and exposure to new ways of thinking need to be deliberately integrated into approaches to leading transformative change.

The Santiago Theory of Cognition suggests a reciprocal relationship exists among structure, patterns of organization, and cognition. This means that individual and collective learning processes are important. The degree to which patterns are rigid or flexible can determine the learning path of leaders and of humankind as a whole. The idea of compensable perturbations invites hope. In many accounts, exposure to a different world-view, a new thinking, a new experience, or a new insight shifted patterns of behavior tremendously

(Kuenkel, 2016; Machery, 2010; Toffler and Alvin, 1981; Visser, 2014), and freed systems from their constraining structures. This is important for attempts to lead transformative change. **Active and conscious perturbations, for example the exposure to very different patterns of thinking and action, cannot be controlled, but they may be stewarded.**

Conclusion 4:

The acknowledgement of reality as it is and as it has come to be is a cornerstone for leading transformative change.

Maturana and Varela's (1987) propositions of structural coupling and compensate perturbations of subsystems assert that **no system can escape its structural history**, yet, as it is always composed of subsystems and is part of larger systems, it is constantly changing. In other words: **humankind cannot escape its own history, but it can change it any time.** For the realm of leading transformative change, this means that acknowledging what *is* and how it has come into being is a cornerstone of changing the world. It mirrors the current situation, in which possibilities for change in human thinking and behavior exist, yet they are constrained by existing deeply embedded historical structures of thought, organization, and action that need to be acknowledged.

These conclusions lead to the next deep dive into an understanding of systems as described in the approach to socio-ecological resilience.

4.2.2 A Pattern Approach to Socio-Ecological Resilience

Another approach to looking at reality as a patterned occurrence has been advanced in the emerging discourse on socio-ecological resilience. This discourse also builds on living systems theory as advanced by Miller (1978; 1985) and further developed by Swanson and Miller (2009) as well as Folke (2006). It is an interesting new framework for looking at patterns as part of ecology. It is an emerging theory that was developed during the first half of the twentieth century and has roots in several scientific fields, including organismic biology, gestalt psychology, ecology, general systems theory, and cybernetics (Capra, 1996; Sabelli and Carlson-Sabelli, 2006; Bertalanffy, 1986). An important insight that runs through systems theory is that the properties of living systems cannot be reduced to those of their smaller parts, and that they arise from the pattern of relationships between the parts (Capra, 1996). **Every organism, animal, plant, microorganism, or human being, but also landscapes, cities, and communities can be seen as an integrated whole.**

Throughout the living world, systems are nested within other systems, from microorganisms to the global society (Capra, 1996; Capra and Luisi, 2014, p. 213). Life, in such a view, is a way of constantly arranging and rearranging patterns of matter and energy within and between these vast arrays of living systems. Sahtouris and Lovelock (2000) note:

Matter/energy arranges itself into bounded but interacting living systems on galactic and super-galactic scales, as well as more locally on the scale of our planet, from its entirety to its microscopic bacterial domains. From our present perspective and limited

knowledge, it appears to us that planetary life has evolved the most active and complex system (p. 372).

This approach views an ecosystem as a dynamically alive collection of what appear to be loosely interconnected components and processes (Jørgensen, Patten, and Straškraba, 1992). Although the term originally referred to biological ecosystems in natural environments, it has gradually moved into describing various other layers of patterned realities; for example, a group of companies united in finding sustainable solutions or even culturally replicated information patterns commonly referred to as memes (Atran, 2001; Moore, 1997; Waddock, 2015). The term 'ecosystems' implies that all parts are dependent upon each other to survive and mutually evolve.

Furthermore, an ecosystem thrives when the individual species within it thrive in a dynamic balance. In a similar way, each part of the ecosystem suffers when the ecosystem as a whole suffers. The interest of each individual part and the interest of the collective whole are fundamentally linked (Checkland and Holwell, 1998; Iansiti and Levien, 2004; Weinberg, 2001). Recognizing the interdependence of all actors or subsystems in an ecosystem, be they biological, business, economic, or cultural, is an important conceptual foundation for leading transformative change. This dissertation explores this interdependence in a deep dive into multi-stakeholder collaboration practice. It may also become a call for business, civil society, governments and committed individuals to collaboratively address the creation of a sustainable future as laid out in the 17 Global Sustainability Goals.

Ecosystems as assemblages of smaller living systems units display an important characteristic of living systems: relationship patterns ordered in the form of a network with constant internal communication (Capra and Luisi, 2014). Although systems can be organizationally closed (e.g. human beings) and have visible boundaries (e.g. the skin), at a larger scale the boundaries of a system can be drawn almost arbitrarily, since each boundary functions at a different level of the larger system. Sahtouris and Lovelock (2000) call these holons. Holons are entities that function autonomously, but are embedded in larger holons. In this way, they are dependent and relatively independent at the same time. The authors use the term 'holonomy' (p. 51) to describe a holon's need to balance its own autonomy with the rules of the larger holon. Each level of organization inherits its particular level of complexity and thus its particular set of emergent properties. Each boundary drawn around a system, or a holon (e.g. a personality, a community system, a city, or a nation) closes a network and creates a shared context of meaning.

Luhmann (1990) pioneered the idea of social autopoiesis, in which communication is a process that maintains the internal network of a system with symbolic boundaries. He argues that such a social network system has recurrent forms and contents of communication, which act as self-amplifying feedback loops. The degree of closure of such a systemic social network is a function of the rigidity or flexibility of a mental structure that is communicated, for example through spoken and unspoken beliefs, values, rules, and memes, often carried by stories (Atran, 2001; Luhmann, 1990; Moore, 1997; Waddock, 2015). They all create a context of meaning that is sustained by continuous conversation. It is almost like a silent consensus, which each member-component of the system seems to 'know together' with the others (Capra, 1996, p. 212). Hence, **from a systems point of view the essential feature**

in the universe is ‘patterned relatedness’ (see also Capra, 1996, p. 173) **in constant communication**. Some argue that this patterned relatedness in communication is much more fundamental than ‘thingness’ (Jaworski, 1996, p. 57). Life, in this view, is fundamentally holarchic, with a continual dialogue among the relatively autonomous holons. This kind of conversation seems to be critical to the survival of the whole as well as the parts. It can be compared to Maturana and Varela’s (1987) notion of structural coupling; however, it places a much higher emphasis on the relational feature of patterns.

The relation between systems is manifold. Every living system receives material and energy from its environment, that is, from other systems. No living system can therefore be independent. Sahtouris and Lovelock (2000) suggest that one needs to see life as a nested ecosystem. Thinking about the part and the whole from the perspective of living systems raises issues of autonomy and mutual dependency. Sahtouris and Lovelock (2000) emphasize that, in such a view, **the nature of living systems is a continuous dialogue between holons at different levels**. Dialogue or negotiation between the interest and identity of the part and the interest and the identity of the whole is continuous. The holon’s relative autonomy is constantly negotiated within the holonomy.

Human beings are part of this ongoing negotiation process. Sahtouris and Lovelock (2000) claim, “[...] we can only understand ourselves as humans by trying to understand our co-evolution with the rest of nature” (p. 264). The multi-layered wholes function as an enormous network in constant interaction; as Capra (1996, p. 82) states: “Whenever we look at life we look at networks”. These patterned networks are non-linear; they are connected in any possible direction and built in a way that constant feedback is guaranteed. **The crucial point, and a decisive difference from human social systems, is that the network of life is composed such that it regulates and organizes itself. In living systems theory, there is no ruler who decides the rules, there is no hierarchy as traditional biology has suggested, there is nothing but a tremendously large self-ruling, self-organized stream of networks** (Sahtouris and Lovelock, 2000; Macy, 1991b). Autopoietic systems (of which human beings are one example) undergo continual structural changes while preserving their web-like pattern of organization with relatively autonomous sub-holons. The components of this network continually create, produce, or transform each other (Maturana and Varela, 1987; Capra, 1996; Capra and Luisi, 2014). In that sense, as Capra (1996) suggests: “The pattern of life, we might say, is a network pattern capable of self-organization” (p. 83).

The level of constant interaction in the network of life seems to be almost incomprehensible for the human mind. Human perception has therefore very much focused on separate entities and separate organisms existing in their physical or social environments relatively independently from each other (Bohm, 1980). Larger systems, for example organizations, societies, or even biological ecosystems, are subsequently seen as collection of individuals or individual entities that have come to live and function together. The shifting boundaries of systems, the ‘getting into each other’ that quantum physics suggests (Bohm, 1980; Wheatley, 1999; Zohar and Marshall, 1994), and also Maturana and Varela’s (1980) ‘structural coupling’ concept all hint that systems have a **complex and constant reciprocal impact on each other’s internal pattern of organization**. Sahtouris and Lovelock (2000) capture this when they say:

The social view of individual people pitted against one another in...struggles makes little more sense as an ideal than the notion that our bodies' cells are competing with one another to survive in hostile bodies. It is simply no longer useful or productive to see ourselves as forced to compete with one another to survive in a hostile society surrounded by hostile nature (p. 109).

In this view, every action – or non-action – of every seemingly individual entity impacts the whole and all other entities, because all is one great network web (Capra, 1996). Or as Sahtouris and Lovelock (2000) conclude for smaller living systems:

Connections with their species fellows and with their ecosystems are always as holons within holarchies, up to the whole Gaian planet. These interconnections were never broken and cannot be, just as our cells cannot break their connections with their organs or their/our whole body (p. 83).

This proposition is best captured in the Gaia hypothesis, a theory suggesting that the ring of active life around the planet is actually one great system of life. There is no real separation between living beings and their environment, but rather one complex network with constant cyclical interaction (Capra, 1996; Lovelock, 1995; Margulis, 1998). **The decisive point here is that, in this theory, life is a hugely complex system of self-regulation that takes care of itself, not humankind of it.**

This challenges the current discourse on transformation to the point that the question arises, who will be able to take care of whom? It contradicts the 'potency' hypothesis that the future will see an emerging human force able to 'manage' the global Gaia ecosystem by means of advances in technology or consciousness. **This theory and this dissertation suggest that humankind needs to learn to 'partner with life processes, and subsequently with evolution', rather than attempting to manage or steer them.** The implications for conceptualizing collective leadership for transformative change are manifold and will be explored below.

Living systems continuously try to create a dynamic balance between self-assertion and integration in larger systems. Overemphasis on one and neglect of the other would lead to imbalance, which usually endangers the system (Capra, 1996). **Self-interest, in this view, is not morally bad; it is a healthy aspect of the maintenance of systems. Only if it is not contained and modified in dialogue with others, or other levels of the whole, does it become detrimental to others, the whole, and eventually itself.** Sahtouris and Lovelock (2000) state:

This is the concept that the universe is a dynamic web of events in which no part or event is fundamental to the others since each follows from all the others, the relations among them determining the entire cosmic pattern or web of events. In this conception, all possible patterns of cosmic matter-energy will form, but only those working out their consistency with surrounding patterns will last (p. 280).

They suggest the term *mutual consistency* as a description for the 'worked out balance' or harmony achieved through dialogue and negotiation (Sahtouris and Lovelock, 2000, p. 23). The key to this negotiated balance is diversity. In nature, diversity is a crucial requirement for sustainability, which is closely linked to the resilience of a biological system (Gotts, 2007;

Gunderson, 2000; Sahtouris and Lovelock, 2000). Some authors argue that biological diversity impacts the resilience of an ecosystem, and more so, that diversity of species also engenders a diversity of responses to disturbances, which in turn, enhances resilience (Elmqvist et al., 2003). They conclude that the **greater the diversity in a system the more resilient a system becomes in the long run.**

This insight has recently been taken up by the discourse on resilience and the governance of intertwined ecological and social systems (Folke et al., 2005). The term resilience was introduced by Holling (1973), but this dissertation follows Walker et al. (2004) in defining resilience as “the capacity of a system to absorb disturbance and reorganize while undergoing change so as to still retain essentially the same function, structure, identity, and feedbacks” (p. 6). In line with the view of life as a vast interplay between manifold living systems, Folke et al.’s (2005) discussion of the governance of social and ecological systems concludes that “patterns of production, consumption, and well-being arise not only from economic and social relations within regions but also depend on the capacity of other regions’ ecosystems to sustain them” (p. 442). It is important to assess, but also to more consciously manage resilience (Armitage et al., 2009), and to this end Folke et al. (2005) suggest the term ‘adaptive co-management’ (p. 448) to describe a collaborative approach to ensuring the resilience of ecosystems, including the social sphere. Elmqvist et al. (2003) suggest that **improved stewarding of resilient socio-ecological ecosystems requires actors across institutions to use different kinds of learning, live with uncertainty, nurture renewal, and foster self-organization towards resilience.** This suggestion resonates with the wording used by the current discourse on leading in complex adaptive systems (Laloux, 2014; Obolensky, 2014).

Life has an inherent tendency for creative unfolding into forms of increasing diversity and complexity (Capra and Luisi, 2014), which is at the same time a movement away from stability. More internally organized and externally interrelated systems are also less stable and predictable (Macy, 1991a). Systems become more responsive and adaptive, but also more vulnerable. Such emerging vulnerability, which may be perceived as a risk, is not only a crucial feature of living systems, but it seems to be a prerequisite for adaptive change. **As adaptability is a fundamental capacity for leading transformative change it is important to look more closely at its conception from a systems theory perspective.**

Macy (1991a) explains that adaptability is not simply reactive, but is based on a predictive capacity, a form of sensing the future. She says:

The gain in adaptability is won at the cost of structural stability and imperturbability, as the system becomes more open and susceptible to its environment. In order to register and respond to what is going on, the system becomes more vulnerable. This vulnerability in turn [...] enhances its capacity to cope [...]. For the cognitive system the ability to cope involves adaptation, not just to things as they are, but as they are coming to be. To ensure intelligibility as well as survival, the system seeks to comprehend not only the results of changes, but the factors of change in themselves. Like the tightrope walker who must raise her eyes to keep her balance, the system maintains its dynamic equilibrium by looking ahead. It keeps its balance not by standing still, subsiding into stasis, but by moving forward, projecting its constructs into

the future. Such adaptation is a predictive and extrapolative activity, rather than an adjustment to present givens (p. 85).

Kauffman goes further when he proposes that **living systems live best in what he calls the 'boundary region near the edge of chaos'** (Kauffman, 1995; 2016). He suggests that in the area of ordered stability, the activity of a system would be too small and too isolated to be able to handle complexity. Too deep in the area of chaos, the system would be too sensitive to small perturbations to maintain its organization. 'At the edge of chaos,' however, a system seems to have the greatest chances for sustainability, because it is best able to adapt, evolve and coordinate complex and flexible behavior. Or as Paul R. Fleischmann (1999) expresses it:

On the edge of chaos, a system contains enough order for self-perpetuation, and enough complexity to enable new combinations and permutations, new energies and new relationship to bubble up among fixed corridors of precedent. One thinks here of the ideal democracy, whose laws hold at bay violence and anarchy, but whose discussions, dissents, and elections facilitate slow roiling of the political arena, to produce renewed governance of continuity and change. Fertile complexity endures longest at the edge of chaos (p. 126).

In conjunction with the discourse on the resilience of socio-ecological ecosystems, this means that **the adaptive capacity of a system is highest in a dynamic state – and this does not necessarily mean stability**. Walker et al. (2004) see adaptability as the capacity of actors to manage resilient socio-ecological systems. They emphasize that it is the 'collective capacity' that counts and they assume that the intention of human actors has a strong influence on the trajectory of any socio-ecological system. However, Folke et al. (2005) contrast adaptability with transformability, which they define as "[...] the capacity to create a fundamentally new system when ecological, economic, or social (including political) conditions make the existing system untenable" (p. 457). They state that **for transformation to happen, new attractors must push the development of the system into a new direction and fundamentally change the rules of the game, the pattern of interaction, or the underlying structures**.

Walker et al. (2004) suggest investigating the role of human intention as a possible attractor for transformation. **In this understanding, transformation is radical and disruptive. It invites chaos as a necessary prerequisite for transformative change. And above all, it raises the question of what new attractors could be, and if they can be consciously brought in, stewarded, or enhanced**. Any transformation must necessarily be ambiguous and risky, and yet bounded by history. Kauffman (2016), in 'Humanity in a Creative Universe,' states, "History is not just a becoming. It is a becoming into what is *now possible*...We flow into the Adjacent Possible, we are sucked into its opportunities" (p. 263). **The way that future leaders individually or collectively choose, or that they are lured into, sits at the edge of the present and can either be haunted by existing structural limits, such as the 'path dependencies' or the 'co-ontogenetic drifts', or it can open up a potential for innovative transformation**.

The quantum physicist Dana Zohar emphasizes that whoever wants to access the most important truths about quantum physics has to live with ambiguity and the knowledge that

nothing is ever fixed or can ever be fixed. She suggests living with the constant awareness of other possibilities (Zohar, 1990). But the state of ambiguity can be re-interpreted as creative. **With living systems theory in mind, vulnerability can turn into responsiveness for change, and become an essential aspect of adaptive or transformative creativity in leading change.** Systems, as Prigogine proposes (Prigogine and Stengers, 1984; Prigogine, 1996), thrive on ambiguity. They survive and more importantly generate novelty in the delicate sphere between order and chaos. Self-organizing systems, human beings, socio-ecological systems, and human communities are characterized by the continuous spontaneous emergence of new patterns and new forms of behavior, in open systems far from equilibrium, with a constant flow of internal and external feedback loops (Prigogine, 1996). **This both challenges and encourages the conceptualization of leading transformative change collectively. It contradicts the notion of leadership as a provision of stability and security, and it invites attention to emergence, creativity, and innovation.**

4.2.2.1 Preliminary Conclusions for Leading Transformative Change

The ecosystem view of pattern as vastly connected reciprocal networks of interaction fits rather well with the insights from pattern cognition. It suggests three more implications for integrating a systems view of life into leading the transformative change the world requires.

Conclusion 5:

Taking care of adjacent systems and the next level whole is a natural consequence of strengthening overall and individual resilience.

The realization that everything on planet Earth is interconnected and any thought or action can influence everything else might be overwhelming. Taken as a pragmatic reminder that the modern world is highly interdependent, this realization may be a pathway to a new ethics and responsibility that transcend moral claims. In an interconnected Gaia system, responsibility can mean ensuring that adjacent systems or the next level whole are taken into consideration when acting (see also Gergen, 2009; 2015). The search for mutual consistency, a negotiated balance between individual and collective interests, or resilience will never end. **The future is constantly under negotiation and construction.** But what counts is a heightened awareness and increasing knowledge of which patterns of behavior and interaction among humans and between humans and nature may strengthen overall and individual resilience.

Conclusion 6:

Systems transformation needs to combine ideas for big change with conscious choices about the adjacent possible.

The call for innovation and transformation needs to be advanced, but at the same time met with caution. Walker et al. (2004) propose that, given the vast variety of ecosystems (social and biological), no one particular approach to future is applicable to all situations. Just like managing transformation, managing resilience through adaptability and transformability

requires risking complexity, chaos, and vulnerability. The only way to counterbalance this is to build deliberate **structures for dialogue**, communication, and iterative learning, thus enhancing the dialogically negotiated mutual consistency Sahtouris and Lovelock discuss (2000). This resonates with Goepel's (2016) suggestion that one needs to look at radical incremental transformation. It relates to the idea that **conscious systems transformation is possible by combining ideas for big change with more conscious choices about the adjacent possible**. Honoring diversity (of culture, history, experience, skills, world-view, and perspectives) as an asset rather than a threat might become a cornerstone of resilience and transformation management. Collaboration initiatives can only be successful when they integrate diverse perspectives, experiences, expertise, and resources (Kuenkel et al., 2011; Kuenkel, 2016). Chapter 6's exploration of the growing body of work on multi-stakeholder collaboration for sustainability will return to this point.

Conclusion 7:

Leading transformative change needs to attend to the identity formation any system requires to function well.

The ecosystems view emphasizes that boundaries between and around systems are essential for the identity formation a system requires to function well. Without boundaries or ordered patterns that are recognizable, identifiable (but still permeable), and distinguishable from others, the identity, meaning or intent, and even the purpose of a system gets lost. This insight becomes increasingly important for leading transformative change in the complex multi-stakeholder collaborations most of the global Sustainable Development Goals require. Collaboration across institutions, nations, and communities with shared worldview requires a delicate management of the identities of the various participating institutions and the identity of the purpose-driven collaboration system. Chapter 6 takes up this point in its deep dive into the practice of multi-stakeholder collaboration.

Purpose and meaning, or intention, are important attractors for transformative change, and this may become an important driving force for leading collectively towards sustainability. This point will be developed further later in the dissertation. The following section will, however, first explore a still-undervalued aspect of pattern thinking in systems theory. Discourses on cognition and resilience avoid attaching any value to systems patterns, and both pay little attention to the dynamic relationships between the properties of patterns in systems. The next section argues that the quality of relationships within the patterns of a system impacts how it functions, and therefore on how the whole functions.

4.2.3 Patterns as Life-Enhancing Design Structures

The afore-mentioned architect and systems thinker Alexander (1979, 2002a) suggests a worldview in which nature's tendency to create wholeness, in the sense of the mutual consistency and resilience of systems discussed above, must be centered in any exploration of patterned structures in nature or in human-made designs. In his view, any visible reality has differing degrees of life-enhancing patterned structure. In architecture, so he argues in his writings on pattern language (Alexander, 1979), non-living objects in humanly designed

patterns of structural elements can, similar to living organisms and if they follow certain design principles, create what he calls the 'quality without a name' (Alexander, 1979, p. xiii-xiv). With this term she means that the infinite possibilities of physical structures and their combination have an effect on the world - *they nourish life or drain it*. Alexander (2002a) proposes that life originates from the degrees of wholeness in a given space. For him, the key to such wholeness is an interdependent and recursive pattern of what he calls 'centers'. He explains:

It is useful to understand, from the beginning, that all systems in the world gain their life, in some fashion, from the cooperation and interaction of the living centers they contain, always in a bootstrap configuration, which allows one center to be propped up by another, so that each one ignites a spark in the one it helps, and that mutual helping creates life in the whole (p. 134).

The term 'center' refers to a physical set of objects that occupy space, but which enter into a relationship with each other. This relational interaction creates coherence in such a way that the organizations become mutually supportive. **This means that their 'being centers' is not simply a result of their configuration as objects or properties, but a result of the relationship they enter into with other objects or properties.** They fill the physical space in any case, but whether they become a *center* is dependent on their relational interaction with other objects. The impact derived from the interaction of all centers contributes to various degrees of wholeness, and eventually, the 'quality without a name'. For Alexander (2002a), the design composition counts when he states:

All centers that appear in space (...) are alike in that they all animate space. It is animated space that has its functional effect upon the world, that determines the way things work, that governs the presence of harmony and life (p. 106).

The degree of life in a certain physical, cultural, or social space originates from wholeness and is enacted in the way the centers interact and influence each other. For Alexander (2005), this quality of wholeness impacts all dynamics in the world (e.g. the behavior of matter and living systems, including human beings). He argues that people who are exposed to the designed patterns he calls 'living structures' (Alexander, 2002a, p.106) detect the quality of life by sensing an aliveness that resonates with their inner feeling.

Alexander (1979) developed a finite system of design principles, which he called *pattern language* that could 'generate an infinite variety of buildings' (p. 191). Art, community housing and even towns would hold a space for the quality of life – or aliveness – to occur. The crucial point of his conceptual approach is that he assumes that the physical properties of a system's pattern, which would normally be perceived as non-living objects, enter into a relationship with each other. They become 'living structure' by influencing each other or supporting each other in their effect on the whole and in their ability to draw a degree of life from the underlying wholeness. This interaction, Alexander argues, affects living organisms, for example the human consciousness that is physically exposed to that space. He also suggests that a patterned space can be generated in a step by step fashion through design, by incorporating design principles, attending to related network linkages, and creating an evolutionary unfolding process, 'one pattern at a time.' In this process, numerous individual acts eventually build a whole community of objects that become 'alive and whole' in a 'slow

emergence of the quality without a name' (Alexander, 2002a, p. 403).

When Alexander taught at universities, he sometimes started his lecture with a simple exercise. He showed two different photographs and asked the students to choose which contained more life. The answers were surprising. About 80% of the students agreed on one photograph (Alexander, 2002a, p.73). After many trials with students, Alexander concluded that their subjective judgments of the degree of 'life' in a photograph, a building, or a painting were not arbitrary. There was a certain pattern in the structures of the objects that caused the students to feel a sense of aliveness. In Alexander's view a visible structure, a pattern in a photograph, a painting, a building, or a landscape creates resonance in the way that it enhances such subjective feelings of aliveness. For him, this subjective feeling can be traced back to objective rules. He suggests that the way space and visible patterns have been ordered can be recognized by human beings (Alexander, Ishikawa and Silverstein, 1977). He claimed that, for example, the feeling of awe and deeper connection that many people have when they stand in Chartres Cathedral or in the Sistine Chapel is not just subjective, but is caused by an ordered pattern of design elements in relation to each other that impacts the person standing in the architectural space. In this conceptual approach, space is never neutral – it is composed of living and non-living objects as always-animated structural patterns, which serve or do not serve life.

Alexander derives from this a moral responsibility for those who construct space, such as architects and town planners (Alexander, 2002b). They may increase or decrease the value of space, with tremendous impact on the consciousness and behavior of people living in such space. He suggests fifteen properties or design elements that ensure patterns that have strong centers supporting each other. These properties, he notes, are not independent from each other, but reinforce each other. As he assumes that the quality of space and the degree of wholeness in a space have a direct bearing on the generation of life, he believes human beings are obligated to create architectural and social spaces that enhance a sense of aliveness. He recommends looking at nature as a model, as nature has an inherent tendency to emerge towards wholeness in a gradually intensifying process. He suggests that while preserving certain elements of structure, nature grows organically into more and more complex patterns. He defines 'structure preserving transformation' as an evolution that improves the overall composition and structure of a system of centers by e.g. reinforcing existing centers, removing or strengthening weak centers, or grouping weaker centers into larger, stronger centers (Alexander, 2002b). According to Alexander these 'structure-preserving transformations' follow an unfolding process of progressive differentiation, while transforming structure from an underlying wholeness. More recently, he has called these 'wholeness-extending transformations' (Alexander, 2007), which he believes can inform a discourse on destructive or constructive co-creation in the world. This process, in his view, is responsible for the creation of life and, if brought into human consciousness, could fundamentally change humankind's ways of world-making.

The concept adds another view to the discourse on transformation for sustainability as it shows how systems transformation could occur without destroying the core elements of a system's structural patterns. It also matches Maturana and Valera's (1975, 1980, 1987) view on structural coupling and co-ontogeny, but adds **the value proposition of the degree of life in a patterned structure. It suggests that a better understanding of patterns and**

adherence to certain design principles in creating patterns could inform approaches to leading transformative change. The elaborations on Alexander's theory of centers may sound abstract, but in light of the state of the world as a collective leadership challenge, they may provide a new and encouraging avenue of thinking. These almost visionary predictions¹⁸ suggest that **once people are capable of perceiving their contribution to various degrees of life, patterns - in nature, in physical space or in human communities - can be designed in more life-enhancing ways.** Alexander (2002a) predicts:

We shall have a view of the world in which the relative degree of life of different wholes is a commonplace and crucial way of talking about things [...]. We shall see that our own feeling, the feeling of what it is to be a person, rooted, happy, active in oneself [...] is itself inextricably linked with order, order is not remote from our humanity [...]. We shall take a view, in which objective reality out there and our personal reality in here are thoroughly linked (p. 22).

With his life's work, Alexander intended to generate both replicable and scalable ways of designing space conducive and nurturing for human beings. His propositions about the origin of life go far beyond his initial work on an architectural pattern language, yet this part of his work has not been seriously taken up by scholars in social, political and sustainability arenas. His deliberations on the need to find properties that create life-enhancing patterns in systems has not been explicitly connected to the discourse on ecological and social systems nor to Maturana and Varela's (1975, 1980, 1987) cognition theory. However, Alexander's work has been very influential in the world of software programming. It found its way into the arena of software development through an article by Gabriel (1996), which argues that software, as it is patterned, should aspire to induce Alexander's 'quality without a name'. It subsequently influenced the development of Wikipedia (Barton and Cummings, 2009), the agile software approach, and the scrum approach (Rising and Janoff, 2000). Today, the idea of pattern languages has expanded to other domains, such as music composition (McLean and Wiggins, 2010), and social change (Cockburn, 1996). Finidori, Borghini and Henfrey et al., (2015) developed what they call a 'Pattern Language 4.0', which focuses on system structures and their embedded dynamic, interactive, and potentially generative relationships. The integration of Alexander's pattern approach into the discourse on human systems development, and especially on transformation to sustainability is only gradually emerging. The development of the practice model, the 'Collective Leadership Compass,' has been greatly inspired by Alexander's approach to mutually supportive centers.

¹⁸ See the following remarks: "The Nature of Order is not only a summa summarum of what Oxford University Press has called "The World of Christopher Alexander", but it is surely one of the most ambitious books ever published. Its profound argument -- that order in both nature and in what we build is essentially the same -- if ultimately understood and accepted by serious readers may prove to be one of the most consequential works Oxford has published in all its 500 years." William McClung, special project editor for Oxford University Press, former senior editor of the University of California Press. Source accessed on 2nd March 2017: <http://www.regismedina.com/articles/christopher-alexander-theory-of-incremental-design>.

4.2.3.1 Preliminary Conclusions for Leading Transformative Change

The view of patterns as life-enhancing design structures complements the two discourses on cognition and resilience described earlier in the chapter. It introduces a patterned structure as a key factor in the degree of aliveness that emerges in a given physical or social space. It suggests three more implications for integrating a systems view of life into collectively leading transformative change towards sustainability.

Conclusion 8:

Understanding how to enhance the degree of life in systems may become a key leverage point for leading transformative change collectively.

Understanding the role of enhancing the degree of life – or aliveness – in people, human communities, and ecosystems may turn out to be a key leverage point for collectively leading transformative change. It would mean shifting dysfunctional patterns of interactions into more life-enhancing functional ones. Promoting skills to recognize and enact life-enhancing patterns of interaction may be an empowering pathway into a more sustainable future. As Finidori et al. (2015) note: “For systemic change to arise, and to be meaningful and endure in the long term, it needs to occur in a variety of ways and arise from many different locations, interconnected as networks and networks of networks” (p. 8). **From this pattern language perspective, wicked problems might be reframed as dysfunctional patterns of human interaction that might be overcome by applying principles that give rise to more functional patterns of interaction.** Actors could take individual and collective responsibility, asking themselves ‘How do we contribute to keeping a dysfunctional pattern in place?’ and ‘How can we contribute to shifting it towards a life enhancing pattern?’ Such an approach to leading transformative change would also imply following Alexander’s proposition that the degree of aliveness in a certain space is an objective and measurable quality.

Conclusion 9:

Leading transformative change needs to be conceptualized as partnering with evolution in stewarding systems aliveness.

Taking Alexander’s proposition of ‘structure-preserving transformation’ or even ‘wholeness-extending transformation’ seriously opens a window into the possibility of partnering with an evolutionary process in leading transformative change. The different understandings of transformation – from a transition that encompasses the entire nature of a system to a co-ontogeny that cannot disconnect from the existing structural history – might be merged into one proposition that sees **transformation as a process, which is not necessarily producing something entirely new, but rearranging existing patterns and structures so that novelty can emerge from the wholeness that is embedded in the existing structure.** This is important for conceptualizing leading transformative change collectively, as it invites to strike a delicate balance between acknowledging a structural history and fostering emerging innovation. It also directs actors toward an approach that honors change processes in the form of ‘one-pattern-at-a-time’. Human-to-human and human-to-nature interactions clearly display dysfunctional patterns in most of the arenas the global Sustainable Development Goals highlight. But if leading transformative change looks for the seed of functional patterns in dysfunctionality, it may more easily contribute to change. In

complex adaptive systems, patterns can be identified and worked with, and possibly transformed into more life-enhancing patterns.

Conclusion 10:

Transformation requires a multiplicity of initiatives and approaches perceived as part of a larger transformation system.

Collections of patterns in transformation arise when actors engage in multiple actions at different levels of the system, from local to municipal to regional to national and international, using approaches that have a degree of similarity, but are not identical to each other. **The key to the pattern approach is to understand how multiple actors, levels, initiatives, and other pieces become part of a change system (Waddell et al., 2015) or as it should be called here - transformation system - that, without central coordination, works collaboratively *together* in a desired direction, so that it brings more life-enhancing patterns to existing systems.** The SDGs provide an important frame for thinking about patterns in change, because they serve as 'attractors' for numerous self-organizing approaches towards systemic change from any number of places and orientations. As attractors, the SDGs provide the basis for strong identification with articulated targets, values, and norms, represented as aspirations in the goals. No one really knows how to reach these goals, but they can foster multiple initiatives, which then collectively have a better chance of getting closer to the goal.

Alexander's work invites a deeper understanding of life and subsequently evolutionary processes for conceptualizing collective leadership for transformative change. Through his work, and especially through the notion of quality, the term pattern becomes 'alive'. Its meaning goes beyond that of structure or order, which both suggests the connotation of being fixed and stable, but not alive in the sense of an animated space. The term pattern, however, entails more than that. At a minimum, it is a living structure, permeable, changeable, always in flux, and above all relational in mutual support of the properties of which it is composed. It entails an almost purposeful order, like water crystals that form an imperfect pattern while striving to perfect the pattern under life-enhancing circumstances such as good conditions, music, etc. (Radin, Lund, Emoto and Kizu, 2008). A structure holds a pattern in place, even at the expense of its functionality. An order is what pattern aims for – an arrangement, a constellation or composition that is most often beautiful, but at the least functional. But it is the relational aspect that makes a pattern 'alive' and creates an animated space.

This is not an entirely new proposition in a growing awareness of a vastly interconnected world. Many philosophers, such as Buber (1962, 1970), but also quantum physicists (Bohm, 1980; Wheatley, 1999; Zohar and Marshall, 1994) have argued that the universe is made up of relationships rather than things. Alexander's work adds the idea that **the increasing complexity of the world is ordered in patterns that can be discerned. Moreover, people can understand and learn how these patterns need to be composed and constructed in a way that their elements become mutually supportive centers contributing to the 'aliveness' of a certain physical or social space. He argues that nature knows how to co-construct such patterns of quality, it seems to do this in a purposeful way, and the**

human mind could possibly learn from this in leading transformative change.

This invites a deeper exploration of the role of purpose or intention as an inherent feature of life. The next section therefore dives deeper into recent insights from biology and biosemiotics that suggest life in general is intentional and meaning-making towards patterns of aliveness.

4.2.4 The Feeling of Aliveness as an Intentional Driver for Sustainability

A number of scholars argue that quality of life, aliveness, and well-being are fundamental for humankind's future. They believe we need to integrate the difficult-to-capture notion of well-being as a quality of life or a feeling of aliveness with sustainability transformations. Goepel's introduction to the Great Mindshift (2016) calls for a new economic paradigm and explains transformation as the qualitative degree of change that needs to be identified and stewarded. She refers to sustainable development as a qualitative outcome of transformation. Raskin et al. (2002) suggest that such transitions would be characterized by a transformation that would affect the entire cultural composition as well as human-to-nature relationships. The authors suggest that a transition to a sustainable world will require "profound historical transformations in the fundamental values and organizing principles of society. New values and development paradigms ascend that emphasize the quality of life and material sufficiency, human solidarity and global equity, and affinity with nature and environmental sustainability" (p.15).

More recently Raskin, Electris and Rosen (2010) advanced a Quality of Development Index (QDI) that rates transformations on "(...) degree of well-being in human lives, the strength of communities, and the resilience of the biosphere" (p. 2631). The Organisation for Economic Co-operation and Development (OECD) (2015) has developed a similar 'better-life-index' that considers individual well-being composed of the *quality of life* (factors such as health, work-life balance, education, social connections, civic engagement, security, and subjective well-being) and *material conditions* (income, employment, and housing). It also looks at the sustainability of well-being over time, which requires taking care of natural capital, economic capital, human capital and social capital.¹⁹ Korten's (2015) proposed narrative for a living economy urges a "co-productive partnership with nature to maintain the conditions essential to all life" (p.136). Weber (2013), discussing enlivenment, suggests:

A profound flaw of our civilization, with its multiple crises, could lie in the fact that we deny the world's deeply creative, poetic and expressive processes, all of them constantly unfolding and bringing forth a multitude of dynamic, interacting relationships. We might have forgotten what it means to be alive (p. 14).

In his recent publication 'Biology of Wonder', Weber (2016) draws on his explorations into biology and biosemiotics to state that life always has a direction; it is intentional. "Life wants to live on, wants more of life, wants to expand, to swell, to blossom; wants to propagate itself and rise again in thousandfold manners" (p. 345). He suggests that human beings share this

¹⁹ Source (accessed on 3rd June 2017): <http://www.oecd.org/statistics/measuring-well-being-and-progress.htm>

urge to strive for aliveness with all other manifestations of life, but that the gift of reflective consciousness allows humankind to understand this process of life and intervene in it with more positive or negative impact than most others.

Weber proposes that ethics and value need to be located not in the individual mind, but in the living network of constant human/ecology interaction (Weber, 2013). He, like Capra (1996), calls this 'the web.' **A sense of aliveness, in this view, is not an end-state to be reached, but a transitory moment that human beings – as all other life – yearn and strive for. This quality is actualized through the web of life, through the constant reciprocal interactions, the continuous mutual transformations of all that the network is composed of** (Weber, 2016). Like Varela's (1999) approach to ethical know-how, Weber's (2016) argument establishes that "any ethics must start on ecological grounds" (p. 347), and contain what is good for the whole as well as for the individual. Working toward an alive and ecologically intact planet, according to Weber (2016), is not an add-on or a moral obligation, but a necessity for human physical, mental, and spiritual survival. He claims **that human beings are so entangled in the web of life that their individual *aliveness* suffers when the aliveness of the whole earth system is seriously compromised.** A shift in consciousness toward seeing oneself as part of a vast entangled collaborative meshwork of life that includes human beings and all other forms of life may be a stepping stone toward patterns of thought and behavior that serve humankind individually and as a collective and also serve the planet as a whole.

This growing discourse on ways of making the 'quality of life' recognizable and measurable lies at the core of a broad-based shift in thinking about the way humankind perceives its role, place, and participation in the ever-unfolding complex matrix of life. It accompanies the emergence (or re-emergence) of a profound empathy with and reverence for the evolutionary process. Such thinking could re-link humankind to the experience of being part of an integrated whole. But taking the feeling of aliveness as a core driver for individual and collective human development also potentially increases empathy with fellow human beings. **If one acknowledges that all beings struggle and strive for more aliveness, it becomes clear that the individual feeling of aliveness is inextricably linked to the aliveness of the whole. The aliveness of one person at the expense of another person, the aliveness of one societal group at the expense of another, the aliveness of one of the world's region at the expense of another, are inevitably detrimental to the aliveness of the greater whole – humankind and the planet.** The interdependency, negotiated balance, and mutual consistency suggested by systems thinkers becomes easier to comprehend. Weber's (2013) concept of enlivenment is crucial; it "means to profoundly rethink our relationship to the world, to the whole – and to other individuals who are selves like us" (p. 58). Pursuing sustainable development goals, then, becomes much less a moral concern or an ethical add-on, but a necessity for self-preservation. **Safeguarding one's own aliveness requires helping others into aliveness.**

Taking into account the three previous sections on the role of a pattern approach in transformation, and emphasizing Alexander's (1979, 2002a) explorations of the degree of life or aliveness in any particular patterned space, this dissertation suggests that whatever quality of life and the experience of aliveness are, these concepts are crucial in understanding sustainability transformations, and hence, important for the conceptual

foundation of leading transformative change. **Aliveness here refers to a recognizable patterned process of transformation well as a recognizable patterned outcome - sustainability.**

The phenomenon of aliveness makes intuitive sense beyond the scientific realm, in day-to-day experience. People usually know without scientific evidence when they are happy, when their hearts resonate, when they feel most connected with life. As Alexander (2004) suggests, human beings are intrinsically linked to the order of life. The self is the filter through which the aliveness of a patterned structure in the world is experienced. He says:

For I believe it is the nature of matter itself, which is soaked through with I, [...] which lies at the core of our experience, [...] existing in all matter, beyond ourselves, and that we must understand it this way in order to make sense of living structure, of buildings, of art, and of our place in the world (p. 116).

Alexander is referring to what is usually side-lined in the scientific, political, and economic discourse as subjectivity. But **subjectivity – individual experience – may as well be a key factor for the shift in collective sense-making and collective agency that sustainability transformations need.** Weber therefore suggests the concept of *enlivenment* as a qualitative successor of the concept of enlightenment (Weber, 2013, p. 14). By enlivenment, he means an approach to sustainable development that has at its core the conscious concern for and promotion of social and ecological ecosystems (from nature to economic systems to human communities to individuals) that *feel alive*. Threatened ecosystems and disenfranchised human communities are both in need of enlivenment. This view connects the self to the large systems that require transformation (Alexander, 2005). Weber (2016) explores this profound shift, not only in thinking about the world, but in day-to-day perception, as a cornerstone for more conscious, and thus more sustainable, world-making. He points out that there is enormous progress in environmental protection, human development, and the discourse about a new and radically different economy. But he also states:

The basic contradiction remains that we consume the very biosphere that we are a part of and that we depend upon. From this perspective, we have not been able to come closer to solving the sustainability question; we remain trapped in its underlying, fundamental contradictions (p. 17).

He suggests that the term sustainability needs to be understood as a functional and continuous process pattern that is life-enhancing. “We will begin to see that something is sustainable if it enables more life – for myself, for other human individuals involved, for the ecosystem, on a broader cultural level” (Weber, 2013, p. 17). He illustrates this point with a quote from Storm Cunningham: “Nobody will be very impressed if you answer the question «How is your marriage?» with «Oh, it’s sustainable.” But everyone would turn his or her head if you replied: «Well, it’s energising. It makes me feel alive,” (Cunningham, 2008, as cited in Weber, 2013, p. 17). Weber concludes that the qualitative transformations advocated by the global Sustainable Development Goals can only be successful, if they enhance “the aliveness of human agents, and of nature and society” (Weber, 2013, p. 21). This is a radically new way of seeing evolution as *intentional*. Living organisms, Weber argues, express their creative urge all the time; they cooperate and compete, make sense and create meaning, and want to be fulfilled. Aliveness results from well-functioning wholes (Weber,

2016). This dovetails with Alexander's theory of centers (Alexander, 2002a) and Sahtouris' mutual consistency of holons (Sahtouris and Lovelock, 2000). The idea of self-creative and self-generating wholes also resonates with Maturana's theory of autopoiesis (Maturana and Varela, 1987), as they live in continuous co-creation of the world, in coupling and co-ontogeny. Similarly, Weber (2016) states:

In the ecological commons a multitude of different individuals and diverse species stand in various relations with one another — competition and cooperation, partnership and predation, productivity and destruction. All these relations, however, follow one higher law: over the long run only behavior that allows for productivity of the whole ecosystem and that does not interrupt its self-production is amplified. The individual can realize itself only if the whole can realize itself. Ecological freedom obeys this form of necessity. The deeper the connections in the system become, the more creative niches it will afford for its individual members (p. 351).

Spreading this understanding of the basic premises of life he sees as critical to mastering the challenges of sustainability (Weber, 2013; 2016). The individual human being, the human species, and the world's vast natural systems are inextricably linked. Saving the environment is not a matter of choice; it is the prerequisite for humankind's aliveness. Weber (2016) notes:

Our own aliveness would shrink without nature or with impoverished nature. [...] Nature is the phenomenon of self-producing life making itself visible. It is for this reason that we must save nature. [...] We must preserve living beings for life's sake, in order for life to be able to self-organize, to unfold, to experience itself (p. 11).

Weber points out that the concept of aliveness is understudied in science, but also difficult to access or to comprehend given science's pre-occupation with objectivity. Like Alexander, who assumes that the self is the connecting element in the experience of different spaces that have a quality of life (Alexander, 2004; 2005), Weber suggests returning an empirical subjectivity to science in order to advance the understanding of the process of life. It is argued here that this **understanding of the interconnectedness of all life around the continuous quest for aliveness is at the core of designing strategies for a more sustainable world** (Weber, 2013). What distinguishes Weber is that he emphasizes subjectivity as a core element of understanding life. He suggests, all living organisms, from bacteria to human beings, act according to values and attach meaning to what they experience. Weber (2016) suggests:

Organisms value everything they encounter according to its meaning for the further coherence of their embodied self. Even the cell's self-production, the continuous maintenance of a highly structured order, can only be understood if we perceive the cell as an actor that persistently follows a goal (p. 3).

Weber is not the only scholar to propose that feeling, along with meaning-making, sense-making, and attaching value to experience, is at the foundation of life. The growing field of biosemiotics has brought together scientists from very different fields around a concern that questions about the nature of life are only partially addressed by current scientific approaches (Favareau, 2010). Biosemiotics is concerned with observable forms of communication and signification within and between living systems, including meaning-

making and processing experience from intercellular level to animal behavior to human consciousness. In such a view, intention and interest are not limited to human thinking. Humans and the rest of nature share the desire to stay alive; to maintain the conditions for life, to grow and unfold, to fulfill one's potential. This new view of biology sees the vast complexity of living organisms as agents with both conflicting and synergistic goals (Weber, 2013). Although it draws on biology, biosemiotics resembles the discourse on systems thinking and complexity theory in its emphasis on the role of humankind in overcoming the limitations of unsustainable practices (Bateson, 1972; Damasio, 2000; Juarero, 1999; Kauffman, 1996; Margulis, 1998; Varela et al., 1992; Weber and Varela, 2002).

These elaborations on the experiential subjectivity of a feeling of aliveness add another element to a system's view of life. This element captures **individual and collective world-making as a constant stream of complex, but also ordered and networked patterns, of which some may be life-enhancing – contributing to the feeling of aliveness of a living organism – and others not.** If one takes the current state of the world as a leadership challenge, a new question arise: **How to steward rather than steer processes that are life-enhancing for the multiple subsystems of human communities, for the next level wholes, and the planet as a whole,** but also for the many overlapping communities of which the complex Gaia system is composed. Nature seems to be self-regulating (Berkes, Folke and Colding, 2000), but the human community has not yet achieved a self-regulating system that works inclusively for all humanity and for the planet as whole. The sustainability challenges of our times are testimony to this. But questions remain. Who decides which patterns are life-enhancing? And if there is a perceived contradiction between differences in interest on what aliveness feels like, who mediates, who negotiates? These questions demonstrate the need for greater awareness of the larger systems in which local and global actors operate. It informs the deep dive into multi-stakeholder collaboration that may ultimately become a model for stewarding, but also collectively negotiating, socio-ecological interactions that enhance aliveness. These interactions are termed 'patterns of aliveness' here. Chapter 5 takes up this question.

But if, as Weber (2016) suggests, the feeling of aliveness is a driving force of *all* nature, then it is also a driving force for human beings. Alexander (2002a) suggests that the capacity to perceive patterns that are life-enhancing – that contain the 'quality without a name' – is in principle available to everybody, or at least can be learned. **Thus, more widely accessible knowledge and practical skills to co-create life-enhancing patterns could be an enormously empowering contribution to the development of humankind in the face of the global challenges.**

The Sustainable Development Goals are embedded in a global social setting with complicated, heavy socio-technical systems governed by structural constraints. In this context, some people may resonate with the experiential subjectivity both Weber and Alexander propose as leverage for change. Others may be repelled, or even feel threatened and will automatically dismiss any attempt to move an abstract concept like "a feeling of aliveness" to the center of transformation strategies. It is notable, however, that many of those who argue that the world needs a new narrative about what it means to be human on this planet, including systems thinkers, biologists, philosophers, environmentalists, sociologists, and economists, use different terms to emphasize a similar **re-orientation**

towards reverence for humanity's participation as a conscious actor in the interconnected self-regulating natural system called the world.

4.2.4.1 Preliminary Conclusions for Leading Transformative change

The perspective developed above sees 'aliveness' as a key element in understanding a systems view of life and suggests three more implications for integrating such a view into conceptualizing leading the transformative change the world requires.

Conclusion 11:

Leading transformative change needs to integrate experiential subjectivity with objective rational approaches.

Weber's proposition that the feeling of aliveness is a core driver of the evolutionary process suggests that the linear world of logic and planning, which does not acknowledge feelings, needs to be complemented by **experiential subjectivity. Integration of the rational and the so-called non-rational** (for lack of a better term) may become a stepping-stone in addressing some of the world's challenges.

Conclusion 12:

Leading transformative change needs to respond to complexity with complex approaches such as multi-stakeholder collaboration

Combining the concept of aliveness and the concept of patterns suggests that the perceived increasing complexity of the world is generated by **connectivity and mutual support, purpose and intention to stay alive, as well as paradoxes between competition and cooperation, and between mutual exclusion and symbiosis.** The global human interactions made possible by modern communication technologies make human beings more capable of perceiving their vast interdependence and enacting it in ways never before possible. Stakeholders in global and local development are more and more diverse; national borders and geography are less and less significant, and ever faster-flowing operations and communications shape work and life environments (UNGC and Bertelsmann Stiftung, 2012). The challenge of complexity may seem overwhelming, but systems theory and recent insights in biology show that **where complexity is high, the capacity to adapt, to evolve, to coordinate, to innovate, and to change is also high** (Kauffman, 1996). The fact that diversity increases the 'aliveness of a system' suggests that transformation strategies should engage more consciously in multi-actor settings. This premise will be taken up in the deep dive on multi-stakeholder collaboration in Chapter 6. When and how systems become 'alive' will be further explored in Chapter 5.

Conclusion 13:

Intention and purpose in leading transformative change are important drivers for co-creating or reinstating the quality of 'aliveness' in global systems

The role of aliveness in introducing **intention and purpose** as an element of striving for life goes far beyond the human realm. On one hand, this may be an unfamiliar thought that removes the privilege of having meaning, purpose and intention from human beings. But, on the other hand, it may also be empowering. Knowing that the search for meaning and the

empowering feeling of following a purpose are not exclusive to humankind **legitimizes the concern for such purpose, meaning, intent, caring, concern, and empathy.** It calls into question the cold objective logic of the current economic world and suggests that those who dedicate their life and work to improving the planet are not dreamers or good-doers. Rather, they are enacting something entirely natural: **they are trying to enhance various ‘patterns of aliveness’ so that the whole becomes more alive.** Hence, engaging in sustainability, or fighting for equality, or re-inventing the economic system are all attempts to rescue, regain or regenerate the aliveness pattern of the planet and humankind. This serves the whole as much as the individual.

4.2.5 Summary of Preliminary Conclusions

This chapter aimed to answer the second research sub-question regarding features of living systems that enhance vitality by taking a deep dive into a systems view of life and exploring the contribution of systems thinking to conceptualizing leadership for transformative change. It argued that a focus on patterns (of nature or the manifold human interaction systems) emphasizes the *relational aspect* of an arrangement, a constellation, a composition, a co-construction, or a co-creation. Moreover, it advanced an understanding of ‘patterns of aliveness’ as constitutional elements for the degree of vitality of socio-ecological systems. In partial response to questions of the relevance of such insights for conceptualizing leading transformative change, it suggested it that transferring and translating the notion of ‘patterns of aliveness’ into gauging the functionality of socio-ecological systems may become key to a new understanding of transformation.

The chapter created the basis for conceptualizing leading transformative change collectively and drew a number of conclusions (see table 5) that can be summarized as:

- Understanding the feeling of aliveness as a core driver of evolutionary processes and adopting such a conception for the human realm could engender multiple ways of leading transformative change collectively.
- Seeing sustainability challenges as dysfunctional socio-ecological systems interactions can spur global collective learning processes to rehabilitate, maintain, or co-create more functional patterns.

The global Sustainable Development Goals and the vision of a world that works for 100% of humanity and the planet as a whole set an important challenge: how to find an operational balance between the interests of the whole and the interests of the individual. Chapter 5 therefore takes the concept of aliveness as a quality element of a pattern approach one step further. It contributes to an **emerging theory of ‘patterns of aliveness’ as a foundation for conceptualizing leading transformative change collectively.** Informed by the systems thinking approaches elaborated above, it suggests how such a conceptual shift can contribute to navigating complex change and inform world-making as a collective leadership task.

Capra and Luisi (2014) note that it is important to explore how **organizing principles** of life give rise to life-enhancing patterns. Drawing on the broad body of knowledge from past and contemporary systems thinkers, Chapter 5 identifies, synthesizes, and summarizes **six**

essential organizing principles that can be seen as enhancing 'patterns of aliveness' in socio-ecological systems. It elaborates this as part of a conceptual framework for leading transformative change collectively. Chapter 6 will go on to explore the relationship between the principles and the dimensions of practice model, the Collective Leadership Compass.

Table 5: Summary of preliminary conclusions
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Deep dives	Pattern Cognition as the Process of Life	A Pattern Approach to Socio-ecological Resilience	Patterns as Life Enhancing Design Structures	The Feeling of Aliveness as an Intentional Driver for Sustainability
Conclusions	<p>Conclusion 1: More conscious pattern cognition is an important leverage for leading transformative change.</p>	<p>Conclusion 5: The necessity of taking care of adjacent systems and the next level whole is a natural consequence for strengthening overall and individual resilience.</p>	<p>Conclusion 8: Understanding the role of enhancing the degree of life in systems may become a key leverage point for collectively leading transformative change.</p>	<p>Conclusion 11: Leading transformative change needs to integrate experiential subjectivity with objective rational approaches.</p>
	<p>Conclusion 2: Co-ontogenetic drifts or negative path dependencies can be reversed or changed by conscious choice.</p>	<p>Conclusion 6: Systems transformation needs to combine big change ideas with conscious choices about the adjacent possible.</p>	<p>Conclusion 9: Leading transformative change needs to be conceptualized as partnering with evolution in stewarding systems aliveness.</p>	<p>Conclusion 12: Leading transformative change needs to respond to complexity with complex approaches such as multi-stakeholder collaboration.</p>
	<p>Conclusion 3: Collective learning processes and exposure to new ways of thinking need to be deliberately integrated into approaches to leading transformative change.</p>	<p>Conclusion 7: Leading transformative change needs to attend to the need for the identity formation any system requires to function well.</p>	<p>Conclusion 10: Transformation requires a multiplicity of initiatives and approaches perceived as part of a larger transformation system.</p>	<p>Conclusion 13: Intention and purpose in leading transformative change are important driver for reinstating aliveness in global systems.</p>
	<p>Conclusion 4: The acknowledgement of reality as it is and as it has come to be is a cornerstone for leading transformative change.</p>			

Chapter 5:

5 Organizing Principles that Enhance Aliveness in Living Systems

Contributing to an emerging theory

A new perspective on reality and future-making – how ‘patterns of aliveness’ can inform approaches to life-enhancing co-creation

Building on the previous chapter, **Chapter 5** suggests a new perspective on reality and future-making. It takes the concept of ‘patterns of aliveness’ in living systems as a foundation for conceptualizing ways of leading transformative change collectively. It argues that approaches to navigating complex world-making and transformative change for sustainability are more effective when they are anchored in a profound understanding of life processes. This approach could lead to more consciously constructive human-to-human as well as human-to-nature interactions. The chapter develops the metaphor of ‘partnering with the wisdom of life processes’ as a pathway to sustainability. Based on the deep dive into the systems view of life in Chapter 4, Chapter 5 advances proposition regarding essential features of life-enhancing systems that inform an understanding of life-enhancing human co-creation for sustainable collective action. It suggests a further answer to research sub-question two.

II What are essential features of living systems that enhance vitality in systems and further life-enhancing co-creation for sustainable collective action in human systems? In what way are they relevant for leading transformative change?

These proposals and the literature on a systems view of life drive this chapter’s contribution to an emerging theory of ‘patterns of aliveness.’ It identifies six essential organizing principles that allow life to emerge, thrive, and re-create itself in natural as well as social systems. Chapter 5 suggests that these principles - in their relational interaction - create a pattern, which positively influences the vitality and resilience, or the degree of aliveness, of a living system. It argues that these principles must be taken into account in the practice of leading transformative change towards sustainability. Following David Bohm’s (1980) cautious thoughts about the development of theory, these six organizing principles are elaborated in the form of a conceptual framework termed the emerging ‘patterns of aliveness’ theory. This theory understands relational interaction in socio-ecological systems as a key contributor to life-enhancing co-creation. Hence, the six organizing principles are less an explanation of reality than a new way of looking at reality in patterned compositions. This insight could inform the practice of leading transformative change. The chapter also relates organizing principles to the current discourse on transformation for a sustainable world, suggesting that the emerging ‘patterns of aliveness’ theory could be leveraged for large-scale systems transformation.

The previous chapter explored the related concepts of patterns and aliveness from different angles of living systems theory, which points at these concepts as among the most common and intricate features of life. The preliminary conclusions for leading transformative change suggested that conceptualizing the role of the pattern perspective required further exploration into what should be called ‘patterns of aliveness’ as a key feature of the life and evolutionary processes. Combining Chapter 4’s insights from living systems theory about the function of patterns in evolutionary processes, Maturana’s and Varela’s (1980) explanation of cognition as the process of the living, the discourse on resilience in socio-ecological systems, and the insights from quantum physics about the sameness of an underlying order for the non-manifest and the manifest reality (Bohm, 1980) with Alexander’s view (2002a; 2002b) of the ‘quality of life’ in a particular space and Weber’s thoughts (2013; 2016) on aliveness as an underlying intention of the process of life, suggests **that nature (read: the process of living) is purposefully and intentionally self-organized and self-regulating. Nature continuously strives to create *patterns in which life can thrive*. These patterns will be termed ‘patterns of aliveness.’** Life seems to create nested and collaborative living systems, from cell to plant to animal to human being to community to state to planet to landscape to ecosystem to the planet as a whole.

5.1 Propositions About Essential Features of Life-Enhancing Systems

‘**Patterns of aliveness**’ are defined here as compositions of life-enhancing, interacting, relational meshworks of mental or physical structure in systems of any size, embedded in larger systems, in a transient, temporary state of dynamic balance at the edge of continuously emerging change. They are characterized and influenced by the quality of relational interaction between subsystems or systems properties that enhance the system’s overall capability to stay alive, grow further, generate new life, and live in mutual consistency with larger systems. **This dissertation argues that understanding aliveness and its patterned composition is central to conceptualizing leading transformative change collectively as partnering with evolution in stewarding transformation to sustainability.** Based on Chapter 4’s deep dive into living systems theory as well as the preliminary conclusions, Chapter 5 lays out fourteen propositions about life as a continuous process of creating patterns of aliveness, and how this understanding can be taken into account in developing the conceptual underpinnings of leading transformative change. These propositions inform an emerging ‘patterns of aliveness’ theory.

Following Bohm’s (1980) cautions about the role of theory, the body of literature reviewed here and the propositions derived from it should not be seen as knowledge about reality, but rather as a new way to look at reality. Every theory singles out some aspects of reality and highlights them. The choice differs depending on the researcher. The constant flux between the enactment of reality and the capacity of human perception expands and changes the way these insights are generated. Using theory as a kind of binoculars through which to look at the world means that the theoretical focus chosen shapes the kind of knowledge obtained. In the quest for answers to the question of how leading transformative change collectively could

be anchored and conceptualized in a systems view of life, the propositions emerged as cornerstones of a potential 'patterns of aliveness' theory. Bohm (1980) proposes:

We have [...] to be alert to give careful attention and serious consideration to the fact that our theories are not descriptions of reality as it is, but ever changing forms of insight, which can point to or indicate a reality that is implicit and not describable or specifiable in its totality (p. 17).

The role of the emerging 'patterns of aliveness' theory, then, is to frame approaches to leading transformative change collectively, and to provide the 'binoculars', through which insights into the research questions might ultimately be identified. The propositions advanced here lead to the development of **six organizing principles** that engender 'patterns of aliveness'. These principles, as an emerging theory, will create the basis for a conceptual framework (table 6) for leading transformative change collectively.

Proposition 1:

The degree of aliveness in a space or in a living system is the result of the pattern of mutually supportive and reinforcing feedback-loops of communication in contextual interconnectedness.

Life is a vastly complex interconnected meshwork in constant communication. There is a continuous movement between highly diverse, complex structure and small, interconnected units with the tendency towards increasing complexity as life unfolds into the manifest reality. This informs **Principle 4 - Contextual Interconnectedness**.

Proposition 2:

Aliveness is a patterned occurrence, and its degree is dependent on mental or physical structures in space.

Life is constantly individually and collectively self-making, and mutually transformative. It is in a constant flow between implicate and explicate order (Bohm, 1980) or the quantum sea of possibilities and the manifest reality (Zohar and Marshall, 1994). Consciousness creates reality and reality determines consciousness (Varela, Thompson and Rosch, 1992). Structures of thinking or mental models (Senge, 1990) that arise from consciousness determine structures and subsequently shape patterns of human action, and vice versa. This informs **Principle 2 - Permeable Containment, and Principle 6 - Proprioceptive Consciousness**.

Proposition 3:

The emergence and the degree of aliveness comes about as a result of relational interdependency - in space, in interaction, in movement, in consciousness - in the form of patterned connectivity. Aliveness is a consequence of living and non-living properties of systems in responsive interaction with each other.

Life is relational. There are no isolated objects or beings in the world, regardless of whether

they are living or non-living. All structures of thinking, action and space are relational, not only as geographically related occurrences in space, but in the sense that every structure, mental or physical, is reciprocally impacted by other structures. As Alexander (2002a) elaborated, they are relational in that they impact the degree of life - or aliveness - that can unfold in a certain space. Structure only exists in relationship with other structure; there is nothing non-relational in the world. This applies to non-living and living structures and to human beings as well. Among many others, Weber (2013) and Buber (1962; 1970) have elaborated on the need to realize that the 'other' makes us. We are nothing without this other - be it the other in people or nature. This informs **Principle 4 - Contextual Interconnectedness**.

Proposition 4:

Aliveness is a result of a growing connectivity between fractals of patterns, which connect subsystems with each other and nested systems within larger systems.

Life operates in patterns that connect across scales (Bateson, 2016). Manifest and non-manifest patterned structures follow the 'sameness of an underlying order' (Bohm, 1980, p. 194). Patterns link the manifest and the non-manifest, the small and the large, and the various forms into which life develops. Prigogine (1996) has elaborated the concept of dissipative structures for chaos and complexity theory (Prigogine and Stengers, 1984) and signals a self-similarity between small and larger patterned units, also termed fractals (Mandelbrot, 1983). This informs **Principle 5 - Mutually Enhancing Wholeness**.

Proposition 5:

The degree of aliveness – as a possibility to grow life's potential - in a natural or designed artificial setting by human intervention - is a function of the conscious or unconscious arrangement of these structures as they form a pattern.

Patterned reality or structures are created or emerge as manifested reality. How this happens, and the result it has, both affect the quality of life that can emerge in a given mental or physical space. Patterns composed of structures can enhance or impede the way the process of life manifests. They can foster or block aliveness. In the realm of art and architecture, Alexander suggests that the quality of patterns can be influenced and, hence, influences the degree of aliveness that can unfold in a given space (Alexander, 2002a, 2002b). He emphasizes that structural patterns composed of mutually supportive centers that enhance each other's aliveness make more alive wholes. This informs **Principle 4 - Contextual Interconnectedness, Principle 5 - Mutually Enhancing Wholeness, and Principle 6 - Proprioceptive Consciousness**.

Proposition 6:

Aliveness is a consequence of the ability to cognize and subsequently make choices that further aliveness.

Life is cognition - and recognition. Living beings and maybe also non-living 'objects' cognize

and recognize patterns; they make choices and emerge, develop, act, interact, and change as a result of cognizing (Maturana and Varela, 1980). Life unfolds according to a 'pattern language' (Alexander, 1979; Finidori, 2015) that conveys not only how to unfold patterns, but seems to be communicated throughout reality. The process of cognition must hinge on the recognition of patterns (Kelso, 1997) and is a basis for choice-making and subsequent behavior in living beings. Pattern recognition has more recently found its way into software programming, where it has become a guiding feature for developing stability (Gabriel, 1996). This process of cognition and pattern recognition works through all senses and in many different ways. This informs **Principle 4 - Contextual Interconnectedness, Principle 6 - Proprioceptive Consciousness.**

Proposition 7:

Human beings, like the rest of nature, are in the constant pursuit of 'patterns of aliveness'. The ability to experience a feeling of aliveness or the perception of a degree of life in a given space is not only a faculty of human beings, but also a faculty the human realm shares with the rest of nature. 'Patterns of aliveness' are intentionally aimed for.

Life is intentional. Living beings and living systems have an inherent urge to survive and maintain their status quo and also to adapt, change, or develop in order to survive, expand, and grow (Weber, 2016). Life is purposeful, every living being (and probably non-living being) wants to create and maintain the best possible conditions for its survival, living, expansion, and growth. Feeling allows one to notice the degree or quality of aliveness (Weber, 2016). (Re) cognizing what helps aliveness of the individual and the whole, and what does not, seems to be an ingrained feature of all life. This is obviously also a trait of humanity, which constantly pursues something better. This pursuit stems from the desire for self-improvement or improvement of something a person can influence. The urge to develop further is a shared desire across humanity – and as Weber (2016) suggests – across nature. This informs **Principle 1 - Intentional Generativity.**

Proposition 8:

Aliveness is a result of diversity in complementarity and reciprocity.

Life is creative; it generates more life in diversity. Life has a deeply ingrained urge to create new and different life. If damaged or compromised, it will find ways to reorganize, regenerate, and recreate. Life is tremendously creative and powerful in expanding life. It helps itself by creating a vast patterned diversity so that the creation and recreation of life always takes place in reciprocity and in a mutually supportive way. The research elaborated above shows that highly diverse ecosystems have strong 'patterns of aliveness', and this makes them more resilient. The interconnectedness of the pattern in vastly complex systems of natural entities "plays" together such that the ecosystem thrives with aliveness as a whole and so do the vast variety of different natural species. Nature thrives on biodiversity in a dynamic yet complex balance far from equilibrium (Kauffman, 1996; 2016) in a continual process of self-making (Maturana and Varela, 1980), other-making, and world-making. This informs

Principle 3 - Emerging Novelty; Principle 4 - Contextual Interconnectedness; and Principle 1 - Intentional Generativity.**Proposition 9:**

Aliveness is a result of collaboration and mutual support. In a high-quality pattern of aliveness, the nodes of a meshwork or the centers (Alexander, 2002a) help each other to become alive and it is this propping up each other's aliveness that creates and expands the aliveness of the whole system.

Life is collaborative. No living or non-living being can serve its purpose and follow its intention without attending to its patterned relationship with other beings (Buber, 1962) or without seeking collaboration and mutual support. The quality of the connection and collaboration in a complex interacting ecosystem determines its degree of aliveness, vitality, and resilience. Yet such a quality is never a status quo, but a continuous process of striving for, maintaining, or rehabilitating a pattern of aliveness while constantly negotiating its composition between the nested components and subsystems. Whether the connections between centers or nodes in a complex entangled meshwork lie idle or are invigorated affects the way they influence the degree of aliveness.

A patterned structure can be conducive for life – or not. No matter how compromised a pattern's capacity to foster aliveness, the underlying urge of life is to re-create a pattern that enhances aliveness. Ecosystems research shows that when the pattern that is conducive for aliveness gets disturbed, it will eventually rehabilitate into a new order of 'patterns of aliveness'. Much ecosystem research (Folke, Holling and Perrings, 1996; Jørgensen et al., 1992) indicates that nature, left to its own devices, recreates or rehabilitates 'patterns of aliveness' over time, even if the timescale is beyond human perception. It is crucial to understand that quality of the connections created by the meshwork or network of a pattern positively reinforces its intensity. The landscape approach, supported by biological research, is currently promoted by the Worldwide Fund for Nature (Endamana et al., 2010). This approach rests on the premise that islands of biological resilience, fostered by conserving or rehabilitating natural spaces of enhanced biodiversity, help each other and can gradually reach the next level whole of an alive ecosystem. This informs **Principle 2 - Permeable Containment, Principle 4 - Contextual Interconnectedness, and Principle 5 - Mutually Enhancing Wholeness.**

Proposition 10:

'Patterns of aliveness' are processes rather than states of dynamic balance that allow for creative and agile response to disturbances. They are striving for perfection while never entirely reaching it.

Life strives for balance and harmony, but never reaches it. No pattern of aliveness is a state of complete harmony. Rather, it is a dynamic, constantly changing balance. Complete and continuous harmony is as alien to life as perfect patterns. In his work on pattern languages, Alexander (1979) suggests that it is not perfect repetition (as created by artificial means) but imperfect, slightly varied repetition that enhances the quality of life of a patterned space

(Alexander, 1979; 2002a). In addition, disturbing 'patterns of aliveness' may compromise the overall sense of aliveness of a system, but may in many instances cause creative responses. Maturana (1980) captures this in his discussion of compensate perturbations as creative disturbances that spur adaptation, agility, and emergence of new forms of life in systems. The creation of novelty is part of life's urge to create ever more life; hence, disturbances are normal and can trigger innovation that shifts the overall patterns over time into an aliveness that opens up to new possibilities. This is a crucial insight for human consciousness. Although the urge to continuously improve is an intention shared with the rest of nature, disturbances are often seen as inconvenient and to be avoided. Yet, the ideal stable state is not what aligns with life's force to create more life. Instead, the capability to turn disturbances into new possibilities, or challenges into opportunities, creates new life. This informs **Principle 3 - Emerging Novelty**.

Proposition 11:

Aliveness can be recognized as the quality of a patterned structure in a system. The emergence of such a structure follows certain organizing principles. The striving for quality in a patterned structure is important as it enhances aliveness.

Life is principle-based. It follows patterned rhythms and rules for the composition of patterned relationships in the way it emerges, creates and regenerates. Like music, it uses a few essential elements, rules or organizing principles to create an endless variety of compositions of manifest reality that, arranged in patterns, enhance aliveness. Yet no 'patterns of aliveness' are perfect, even when they follow underlying principles and their underlying purpose seems to be to create more life, to enable more 'patterns of aliveness' that can give rise to more still more unfolding of life, new possibilities and generation of the new forms of life, species, ideas, or actions. This can be seen in the holographic photography of water crystals (Radin, Lund, Emoto and Kizu, 2008). The arrangement of water crystals, a pattern of aliveness indicating the quality of the water, is never perfectly geometrically set in space even under the best of circumstances (e.g. spring water). Life seems to strive for perfection by following certain patterned principles, but if it reached perfection, it would be dead. Yet, the more polluted and dirty water becomes, the more distorted the crystal patterns. Research has shown that drinking water transmits the patterned (aliveness) information in the water crystals and affects the mind/body system of human beings (Radin et al., 2008). The above elaborations inform **Principle 3 – Emerging Novelty**.

Proposition 12:

As all life humankind has the faculty to recognize 'patterns of aliveness' and to consciously enhance them. Hence, shifting consciousness, i.e. the nature of seeing reality, is an important lever for creating or recreating 'patterns of aliveness'.

The process of enhancing life can become more conscious. Human beings have the faculty to become aware of this process of fostering aliveness. They can consciously intervene into the process of creating 'patterns of aliveness' - for better and worse. Many of these

interventions are somewhat unconscious or intuitive, but the world and humankind would not exist anymore, if these essential principles ceased to function among humankind. **People simply follow life's inherent urge to re-create aliveness – by driving a better future, by fighting for a better society, by helping people in need, by engaging for the conversation of nature, and so on. But connecting this human faculty to the overall process of life rarely happens consciously and almost never at the large scale needed to create a global turn-around for a world that works for 100% of humanity and the planet as a whole. Currently, humankind fights a continuous battle between collective destruction and unilateral re-creation of 'patterns of aliveness,' often at the expense of others' aliveness.** It is not clear whether it is possible to observe and consciously introduce processes of co-creating aliveness into ecosystem rehabilitation and other forms of societal and global change. The global threat of climate change, a globally-compromised pattern of aliveness with potentially severe path dependencies to destruction, means that humankind needs to learn fast. Consciousness changes patterns – and patterns change consciousness. Thinking has an enormous impact on how reality manifests – and reality informs thinking. Epigenetics has provided a recent ground-breaking insight into this reciprocal relationship. It shows that thoughts, feelings and emotionally-laden experience can change our genes (Carlson et al., 2015; Lipton, 2015; Weaver et al., 2004), which in turn change how life unfolds. This informs **Principle 6 – Proprioceptive Consciousness.**

Proposition 13:

The individual sense of aliveness and the overall aliveness of a human system are the results of the enacted capacity to co-create or rehabilitate a patterned mental or physical structure that enhances aliveness.

Life rehabilitates towards 'patterns of aliveness'. Compromised 'patterns of aliveness' can get along for a while and exist with compromised aliveness of the whole and its subsystems. However, such systems are less resilient, less likely to recover from disturbance, or unable to respond to problems in a creative way. In natural systems, and also in the human body, disturbed or compromised 'patterns of aliveness' are often balanced by other elements of a patterned system. Alexander (2002a) terms these centers or nodes in the patterned meshwork, which can take over tasks and help the system stay alive. Research has shown that when brain damage occurs, other parts of the brain can step in to take over certain functions (Kelso, 1997). In societies that suffer from severe disturbances or serious societal imbalances, often people step in to restore compromised, dysfunctional patterns. For example, over the past ten years, social entrepreneurs (Peredo and Mclean, 2006) have taken over societal roles from failing institutions and worked towards rehabilitating 'patterns of aliveness' in a society. It is almost as if, following the underlying urge of life, people sense what is needed to reconstruct 'patterns of aliveness' after environmental or societal destruction. They sometimes intuitively notice what will help maintain the minimum degree of 'patterns of aliveness' in a severely compromised overall pattern. There are many examples how mutual support, human encounters, the arts, and music have created enlivenment for people in severe distress such as war or large-scale disasters. After the nuclear disaster in Fukushima, the Berlin Philharmonic Orchestra decided to perform in Japan in the affected

region as a form of solidarity and to offer the affected population a sense of healing or aliveness through music. Life, including humanity, has an inherent faculty to rehabilitate 'patterns of aliveness'.

Proposition 14:

Even under the most severe conditions of destruction life has the inherent capacity to reconstruct 'patterns of aliveness'.

Life can be severely damaged, or even destroyed. Disturbances are not always creative, but can also be destructive. Destruction occurs when the pattern of aliveness and its mutually supportive centers or nodes of the patterned meshwork get severely damaged, or the overall patterned structures become so misaligned that rehabilitation or transformation into a pattern of aliveness is no longer possible. This happens in degraded ecosystems that lose the capacity to maintain themselves, or can only be maintained in a compromised and artificial way by human intervention. The example of large industrialized agriculture shows that soil fertility, a natural pattern of aliveness, deteriorates over time as its industrialized maintenance does not take into account the complex natural pattern of aliveness. Not surprisingly, over time, it takes its toll on the overall pattern of aliveness not only of the soil, but also of a region. But compromised 'patterns of aliveness' can develop back into a full pattern of aliveness with careful human intervention or if they are left to their own devices, as in the case of soil. The natural structure – the pattern of aliveness – regenerates over time. In human beings, compromised 'patterns of aliveness' manifest as illness that may or may not be returned to full 'patterns of aliveness'.

If 'patterns of aliveness' cannot be maintained, the structure disintegrates. Yet, even in the most severe cases of destruction, life eventually captures the pattern back. Often by shifting the form of life and sometimes by sacrificing sub-systems, gradually life will regain its possibilities. But this is only the case if the destruction is not too severe. If the destruction is too strong, too many centers get destroyed, or the structure prevents the centers from being connected so that they can't help each other, then the pattern of aliveness breaks down and the system gets destroyed. It gets destroyed only to a certain degree, because the components that lack aliveness may still hold the potential of aliveness. As the urge to create 'patterns of aliveness' is so strong, components can reassemble and be reused or taken over by other 'patterns of aliveness' and finally rehabilitate.

Rehabilitating life takes time. A faster turn-around in human evolution is particularly important, because a lot of time will be required for nature (and human societies²⁰) to rehabilitate from a path dependency of destruction. This process can be accompanied, protected, enhanced – or stewarded - but not forced. Systems in which 'patterns of aliveness' have been severely damaged can lose their ability to re-create or rehabilitate 'patterns of aliveness' for a long time. If too many 'patterns of aliveness' are damaged, the nested systems lose their capacity to re-create an overall 'pattern of aliveness' that would help

²⁰ An African proverb says: "It takes three generations to overcome a war."

nested subsystems to rehabilitate or transform into new 'patterns of aliveness'. This is historically evidenced in the fragility of post-conflict and post-war societies. Many examples for such fragility can also be found in nature, where biodiversity has been lost to a point that rehabilitation is difficult.

The current sustainability challenges the world faces, described in Chapter 3, show an increasing drift or path dependency towards patterns that are dysfunctional for humanity and nature, for the individual and the whole. **Stewarding the rehabilitation, re-creation, creation, and mutual enhancement of 'patterns of aliveness' may become one of the most important tasks for global leaders.**

The next section therefore explores what these 14 propositions leading to an emerging 'patterns of aliveness' theory could mean for human realm in the context of the current global challenges.

5.2 The Emerging 'Patterns of Aliveness' Theory and the Human Realm

If the propositions about 'patterns of aliveness' as an essential feature of the process of life hold true, such patterns should exist between humans and nature, between humans and humans, between human-created structures and people in cities, societies, states, supply chains, social services, the globalized world, and so on. **At every moment, every step, everywhere, humanly designed structures, mental processes, and physical actions intervene into this vastly complex nested system of life. They can compromise, endanger or destroy 'patterns of aliveness'. Or they can enhance, (re)-create, or rehabilitate such patterns.** From this perspective, past and current phenomena in global, societal, and personal development might be interpreted as failed or successful attempts to create, recreate or destroy 'patterns of aliveness'.

A prominent mental shift in noticing what constitutes aliveness is shown in new discourses on measuring the perception of happiness and quality of life. These measurements are informed by the assumption that an individual's perception of happiness is a consequence of the functionality of a larger system with many interacting factors. The Gross National Happiness Index (GNH) was developed in response to the concept of the Gross Domestic Product (GDP), which failed to measure the real progress in a society according to many critics (Constanza et al., 2014; Hajiran, 2006), because it measures growth indicators that do not show the overall health (or aliveness of the societal system). Despite ongoing criticism that it is subjective, the GNH measures happiness in nine societal dimensions (Pennock and Ura, 2011): Education, psychological well-being, health, time-use, cultural diversity and resilience, good governance, community vitality, ecological diversity and resilience, and living standards. The OECD Better Life Index²¹ compares the well-being across countries

²¹ Source accessed on 3rd June 2017: <http://www.oecdbetterlifeindex.org/de/#/111111111111>

according to eleven topics that the OECD considers important for well-being, such as housing, income, jobs, community, education, environment, civic engagement, health, life satisfaction, safety, and work-life balance (Mizobuchi, 2004). Both indexes can be seen as an attempt to identify personal, societal, and also global 'patterns of aliveness' that foster individual and societal happiness. Promoters argue that what gets measured gets improved. Critics argue that the measurements do not justify conclusions about societal performance, resilience, or future-orientation. But both indices bring the issue of human well-being, here understood as a pattern of aliveness contextualized in social and environmental aliveness, into the global agenda.

One of the most important insights from living systems theory is that life is a process, not a defined (and measurable) state. Indices, however, can only measure a moment in time. Hence, the proposition that humankind's ability to consciously enhance 'patterns of aliveness' (or prevent their destruction) *is a continuous process* cannot be captured by a measurement of a particular state in time. The human longing for states of aliveness must be understood as a human manifestation of a life principle that humankind shares with the rest of nature. **Becoming conscious of how human beings in the age of the Anthropocene influence their individual pattern of aliveness and the overall pattern of aliveness of the planet may become a key element in empowering leaders to partner with evolution for a transformed world.** What makes human beings different from the rest of nature is their ability to gain insights, communicate them, and change behavior, individually and collectively.

Translating the proposition that 'patterns of aliveness' are central to the co-creation and maintenance of living systems into the human realm at individual, societal, and global scales requires considering the following aspects:

- **Human beings (as all other beings) have an inherent ability that helps them feel, perceive, notice, and observe 'patterns of aliveness' internally and externally.** Human beings are part of this process of life towards aliveness patterns, but they can also communicate their feeling of aliveness, consciously influence the emergence of such patterns, and consciously or unconsciously destroy them. They also have an inherent tendency to seek 'patterns of aliveness' for the better (for example, by taking care of personal health, social health, and the world's integrity) or worse (by taking care of personal happiness at the expense of others', society's, and the world's integrity). Thus it is essential to integrate the 'patterns of aliveness' proposition into collective sense-making and collective agency approaches.
- **Human beings follow the same urge as all life by seeking to maintain the conditions for survival** and beyond, seeking to enhance life, seeking to expand and grow. In doing so human beings are deeply driven by a sense of belonging, by a longing for a relatively stable identity (Polletta and Jasper, 2001). They are also driven by the need for relational surroundings that make them feel safe and are perceived as able to maintain the conditions for survival and growth. If people feel that stability is compromised or endangered, they naturally become fearful and start defending the status quo. Fear engenders a fight for survival. In its mild form, fear is a feeling that inspires action to defend or regain a feeling of aliveness (Kirsch and Windman, 2009). If

action fuelled by fear does not easily succeed in regaining ‘patterns of aliveness,’ people tend to be pulled into destructive actions toward others or the surroundings, assuming that they may help them to regain their feeling of aliveness. They might also accept a substitute that offers a temporary feeling of aliveness, such as material consumerism, radical community identities, addictive drugs, or other seductions. Losing the ability to see oneself as part of a larger interconnected system, which requires aliveness as a whole, sets path dependencies that lead to self-destructive behavior, or destructive impact on surroundings, others, societies, nature, and the system as a whole. Path dependencies might spiral downward, fueling a false sense of aliveness (e.g. through drugs, economic exploitation, gambling, stock exchange, wars, etc.) for one part of a system, and a pattern of destruction for other parts of the system. This goes on to inform actions that further compromise the overall aliveness pattern. Hence the very craving for ‘patterns of aliveness’ can create destructive path dependencies: the more fear people have, the more they tend to defend a certain identity and belonging. They may perceive this as requiring fighting others, resisting circumstances, or engaging in a destructive course of action.²²

- **The extent to which human beings’ capability to consciously (re)cognize ‘patterns of aliveness’** is enacted in response and relation to a larger system determines their subsequent behavior. When people become aware of their participation in a larger system and reflect on the relationship between their own aliveness and that of their surroundings or the larger system, their way of thinking and acting changes. One of the most prominent and often-cited examples is the inner shift to perceiving the wholeness of the planet Earth that happened when the astronaut Rusty Schweickert looked at the planet from his space ship.²³ The effect of this awareness on intentional change has been

²² It is interesting to observe that most populist movements work with a mixture of fear and defense of a certain identity. They spur people’s inherent urge to maintain their aliveness, albeit utilizing this urge to suggest a win-lose arrangement that depends on the exclusion or destruction of other people.

²³ Rusty Schweickart mentioned in Peter Senge’s *The Fifth Discipline*. Rusty Schweickart was one of the astronauts who went to the moon in 1969. According to Peter Senge (Senge, 1990, p. 368) he could not express the depth of his experience for a long time, until he finally decided to simply describe what happened: “Up there you go around every hour and a half, time after time...And just the way the racks of your orbit go, you wake up over the Mid-east, over North Africa. As you eat breakfast you look out the windows as you’re going past and here’s the Mediterranean area, and Greece, and Rome, and North Africa, and the Sinai...And you realize in one glance that what you are seeing is what was the whole history of man for yearsAnd you think of all the history you can imagine looking at that scene. And you go around down across North Africa and out over the Indian Ocean, and look at that great subcontinent of India pointed down as you go past it. ...And you finally come up across the coast of California and look for those friendly things: Los Angeles, Phoenix...and there’s Houston, There’s home.....And you identify with that, you know, it’s attachment.And then you identify with Los Angeles and Phoenix and New Orleans. And the next thing you recognize in yourself, is you’re identifying with North Africa. You look forward to that, you anticipate it. The whole process begins to shift what it is you identify with. When you go around in an hour and a half you begin to recognize that your identity is with the whole thing. And that makes a change.....You look down there and you cannot imagine how many borders and boundaries you crossed again and again and again. And you don’t see them. At that wake up scene – the Mid-east – you know there are hundreds of people killing each other over some imaginary lines you can’t see. From where you see it, the thing is whole, and it’s so beautiful. And you wish you could take one from each side in hand and say “Look at it from this perspective, look at that. What is important?”...And you realize that that perspective...that you have changed, that there is something new here.” (Rusty Schweickart, quote taken from Senge, 1990, p. 369-270).

also evidenced in the environmental movement that gained enormous traction towards the end of the last century. It can also be seen in the growing global acceptance of climate change as a threat to the future of the planet and humankind. Waddell (2016) mentions its effects on individual activists who realize they are part of a larger change system. Helping people to see a larger system is also being used in change management, turnaround management, and societal change. Feeling purpose and meaning are crucial drivers for connecting with a larger intentional system. Both enhance a feeling of aliveness, engender caring action, and enhance stamina to pursue a goal (Chalovsky and Krishna, 2009). Aliveness also seems to be contagious – people who connect with others driven by meaning and purpose probably experience what Alexander (2002a) describes as recursive patterns of mutually supporting centers. ‘Patterns of aliveness’ emerge between human beings (not unlike spots of strong biodiversity in nature) who support each other. They enhance each individual’s feeling of aliveness. This is why people from different backgrounds, who share a mission, come together and support each other. Thriving communities have strong patterns of individual choice and mutual support.

Making the essential human faculty to recognize ‘patterns of aliveness’ in nested systems more conscious and more accessible may be crucial stepping stone for leading complex transformative change for the future of humankind. Yet, the human faculty to recognize ‘patterns of aliveness’ is nothing new. Without it, humanity would not exist; the world would not exist. Without nature’s inherent capability to re-create ‘patterns of aliveness’ the planet couldn’t survive. This dissertation argues that, without humans’ inherent capability to consciously re-create ‘patterns of aliveness,’ humankind can’t walk into a livable future.

But it is important to remember that ‘patterns of aliveness’ are not an ideal state to be reached; they are the capacity of a system (natural or human) to constantly create, maintain, re-create, or rehabilitate patterns that enhance aliveness, and open up towards new possibilities. This is the basis for resilience in human beings, the ecosystem, organizations, societies, and the world as a whole.

The following section therefore examines the potential role of recognizing ‘patterns of aliveness’ as an important lever for conceptualizing leading transformative global change.

5.3 ‘Patterns of Aliveness’ as Guidance for Leading Transformative Change

The world currently exhibits numerous negative path dependencies in conflict, exploitation, societal disparity and overuse of natural resources. This suggests that the human longing for individual ‘patterns of aliveness’, if not individually and collectively constrained by rules that govern mutual consistency, can become destructive, and ultimately self-destructive. At the same time, this awareness can be a lever for transforming the world and increasing humankind’s ability to collectively negotiate a pathway into a more sustainable future.

For this reason, organizational, social, and global governance systems are increasingly

important as a way of maintaining mutual consistencies and negotiated balances between the interest of the individual and the interest of the whole. Such governance systems can take many forms, including community engagement, corporate governance, governance of the global financial system, and global governance (Biermann, Man-san Chan, and Pattberg, 2007; Duit, Galaz, Eckerberg and Ebbesson, 2010). The definition of an adequate balance between the interest of the individual and the interest of the whole may not only change over time, but may also be subject to arduous negotiations between different interests. Governance systems in their varied forms are not new to human history. They have accompanied human evolution since the beginning and have developed from indigenous forms of social dialogue (De Liefde, 2003) to national, international, and global systems of governance like the UN. The complex development of the 17 Sustainable Development Goals is testimony to the increasingly perceived need to establish guiding handrails for global development and ensure that humankind finds a better balance between the interest of the individual and the whole within the planetary boundaries (Rockström et al., 2009). The importance of governance systems as one way of maintaining 'patterns of aliveness' will be taken up in Chapter 7.

But governance alone may be an insufficient answer to the challenges the world faces. From the perspective developed so far in this dissertation, they constitute an attempt to ensure and maintain overall 'patterns of aliveness' in a local, global, and organizational human communities within certain environmental and planetary boundaries. The growing interest in and demand for multi-stakeholder collaboration and multi-actor partnerships for sustainable development can be taken as an indication of humankind's courageous search for new ways to deal with complex challenges and negative path dependencies by experimenting with new forms of governance, negotiation, and collaboration. Chapter 6's deep dive into recent advances in multi-stakeholder collaboration and its potential to build 'patterns of aliveness' in functional human collaboration systems will take up this question.

'Patterns of aliveness' are always open-ended, never fixed, never ideal or even finished, but in constant emergence and becoming (Finidori, 2015). In his essay about enlivenment Weber (2013) introduces the concept of the commons as a defined space for which everybody shares the responsibility to maintain dynamic 'patterns of aliveness.' Kelly (as cited in Capra and Luisi, 2014) explains that governance of economic entities furthers a sense of aliveness, because people feel ownership for the respective entity. John Fullerton, in his white paper on a regenerative economy, speaks about achieving a 'regenerative vitality' (Fullerton, 2015, p. 43). People need to tap into this regenerative vitality when they begin to design a world economy in service of life. Fullerton (2015) suggests that "[...] something magical happens when we tap into the unique creative and not yet seen regenerative potential that exists [...] invoking the power of holistic thinking that encompasses complexity, [...] we suddenly achieve a new understanding of what is possible" (p. 43). All these future thought leaders seem to hint to the human capability to recognize 'patterns of aliveness' and to drive change into a direction that enhances aliveness in the human community as part of a global community as part of a global Gaia system.

They also identify a mental connection, what Fullerton (2015) calls 'holistic thinking' and Raskin (2016) calls a 'sense of wholeness', or the growing human mental ability to

encompass the vast complexity of planetary life and its role in it, as an important prerequisite for recognizing what ‘patterns of aliveness’ are or could be for the planet as a whole and for all the nested social and ecological subsystems. Weber (2013) argues that the human ability to build an inward emotional connection to the outward complex beauty and aliveness of the world creates the necessary shift in how people perceive the reality. Waddell (2016a) argues for a more rational approach to perceiving wholeness in the form of larger change systems, resulting in more effective complementary collective action (Kuenkel, 2016).

Holistic and globally responsible thinking seems to emerge when emotional inwardness (Weber, 2013) and rational awareness of the larger system are connected. This connection is important for conceptualizing leading transformative change, but it only becomes operational and leads to more responsible collective action in conjunction with a greatly enhanced human capability to recognize and discern *patterns*. **The widespread shift in thinking and perception – from identifying and dissecting objects in a linear cause and effect logic only, towards recognizing the world in dynamically interacting patterns,** is a crucial element of the paradigm shift Meadows (1999) called for in her article on leverage points for world change. The limitations of everyday consciousness, life experience, and the prevailing scientific paradigm that encourages dissecting rather than connecting, make it hard to grasp the idea of *the whole* as an entity that can be perceived, studied, and experienced. It is even harder to understand what it would mean to attend to an *aliveness pattern of the whole* in the way people think, act and lead transformative change for a sustainable world. Despite the encouragement of such future thinkers as those mentioned above, it is difficult for the average person to see the coherence of the whole and the vast interplay of ‘patterns of aliveness’ between the whole and all parts. It is much easier, much more operational and much more livable to concentrate on certain issues, focus on fragments and ignore Bohm’s (1980) scientific insight that each fragment actually entails the whole. Not surprisingly, the human mind is drawn to emphasize difference, see separate objects rather than interconnected relationships, and look at interacting systems as something external to them that can be observed, described or assessed. Isaacs (1999) states that human beings “make the mistake of thinking that if we can somehow get the parts in connection that will produce a sense of wholeness” (p. 68).

Hence pattern cognition represents an enormous shift in thinking, although it is anchored in a human capacity that is not new. It is a way of learning to see with a different focus, to defocus, like the ability to see patterns behind patterns in a 3D picture. **Enhancing the human capability to more consciously cognize patterns may be an enormous bridge between the pursuit of individual happiness and a lived responsibility for the aliveness of the whole.**

Yet building the individual capability of conscious pattern perception is as important as building the collective capability for sense-making that allows insights to be translated into more conscious collective co-creation (Kuenkel, 2015; Snowden, 2015). This will only support a transformative path if combined with a willingness to take into account ever-larger systems that provide checks and balances for collective pattern cognition. New checks and balances that go far beyond currently-known governance systems are needed to safeguard the emergence of ‘patterns of aliveness’ that invigorate smaller and larger systems. They are

also needed to prevent the dangerous disconnect that gives rise to aliveness substitutes and negative path dependencies at the expense of entire human communities, races, or the natural environment.

'Patterns of aliveness' will never be perfect and they will always be negotiated among human beings and between humankind and the planet as a whole. A more conscious global learning that incorporates knowledge about which kinds of 'patterns of aliveness' create vitality, resilience and increased global human happiness might yet lead to Fullerton's (2015) regenerative economy and Raskin's Earthland (2016). A more widespread ability to consciously cognize patterns and characterize their interactions might allow actors to reconceptualize the world challenges outlined in Chapter 1. Instead of wicked problems that demand once-and-for-all solutions, they might be seen as dysfunctional patterns of interaction within human communities and between human and ecological communities. In a sense, they might be conceptualized as human incompetencies in interaction with the consequences of dangerous path dependencies and run-away loops that spiral the world downwards. It is argued here that these incompetencies are caused by a non-systemic thinking that disconnects humans from nature and nourishes the illusion that individuals' or communities' 'patterns of aliveness' can only be achieved in competition, or in win-lose battles.

Tapping into the human faculty to take a more systemic view of life on earth, and into their ability to recognize 'patterns of aliveness,' requires strategies, tools, instruments, models, and leadership capacities beyond those, which are currently known or ordinarily applied. Chapter 6 will therefore look at how models like the **Collective Leadership Compass** can translate a systemic view and thus enhance the capacity of actors to see or diagnose patterns in small and large-scale change endeavors. This dissertation argues that the future will see the need for conscious pattern cognition far beyond its current application in the IT world. **Enhancing the widespread human ability of working with patterns requires developing new human capacities or making better use of existing capacities, including leadership capacities. New skills are needed for detecting dysfunctional patterns much earlier, negotiating 'patterns of aliveness' that benefit the part and the whole, and co-creating mutual consistency among nested evolutionary systems. Recognizing functional patterns for a purpose that serves individual needs and stays connected to the checks and balances of the whole may become a prerequisite for a thriving world with a population of more than 8 billion people. More conscious pattern cognition may become the day-to-day management task of government officials, business leaders, schoolteachers, and civil society activists.**

Pattern recognition as such is not new. Most management tools, assessment tools, systems mapping, and other tools to diagnose human and ecological systems identify patterns, even if they do not explicitly say so. Most often, these tools identify dysfunctional patterns of interaction between people, subsystems or larger communities so that intervention strategies can be applied to make the pattern of interaction more functional. Chaos theory has been applied in corporate change management (Gharajedaghi, 1999; Pór, 2008; Richards, 2001; Robertson, 2015) to diagnose dysfunctional patterns and shift corporate cultural patterns.

However, most management practices work by defining deficiencies and suggesting measures to alleviate the deficit. Most intervention strategies, in change management of corporations, but also in societal change and the entire global development cooperation community, are problem- and solution-focused. They follow a more mechanical approach and assume that applying certain measures, adhering to certain rules, giving certain inputs, and changing certain structures will suffice to move the more or less stable deficit state of a system into a stable functional state. Such an approach may often work for a limited range of interacting systems, but it will probably fail in addressing vastly complex interconnected global challenges. **Pattern cognition, as a new discipline in leading transformative change, would involve identifying and strengthening the inherent capacity of a system to self-organize towards ‘patterns of aliveness’, but also stewarding the conditions and patterned structures that empower systems to gain, regain, co-create, or rehabilitate aliveness.**

In many instances, focusing on a solution might be the only way to re-install, rescue, or restore a pattern of aliveness. Many authors (Meadows et al., 2004; Rockström et al. 2009) have shown how a regulatory approach could safeguard progress toward climate adaptation, energy efficiency and resource efficiency, and development of a global governance system that can steward a negotiated balance between individual and national interests and the global commons (Glasbergen, Bierman and Mol, 2007). A focus on solutions is important, but it may be only part of the pathway. The world’s development towards sustainability shows that most solutions are only temporary and may ultimately cause the next problem that needs to be overcome. **Solution-focused interventions need to be accompanied by interventions that strengthen the capability of a system to recognize dysfunctional patterns quickly and collectively, and enhance its capability to respond to the deteriorating patterns with restorative or innovative co-creative pathways.** This will be taken up in Chapter 7.

Translating these insights into the world’s complex challenges and the trajectory of global transformation in the context of the 17 Sustainable Development goals means acknowledging that the technical or social solutions require more than the application of measures. **Rather, the human ability to perceive and act on ‘patterns of aliveness’ is a key element in empowering human systems to take care of local and global patterns of aliveness in multiple ways.** This is a cornerstone in carrying out global responsibility to develop the mutually consistent, urgently needed, nested, interacting human/natural systems envisaged in real-utopian writings (Raskin et al., 2010).

This shift would allow a reevaluation of the structure of systems that unevenly enhance senses of aliveness while deteriorating the aliveness of the whole. The current world economic system is operating with mental and operational principles that foster the material growth and expansion of individuals and societies at the expense of the overall aliveness of nations, human communities, ecological systems, and the world as a whole. For example, corporations, civil society organizations, and governments are making increasingly complex attempts to safeguard adequate living conditions, as a prerequisite for a sense of aliveness of producers that serve global value chains through standard setting. This shows an increasing awareness of the need to rebalance a dysfunctional economic system. The role

multi-stakeholder initiatives play in correcting negative path dependencies will be examined in a deep dive into multi-stakeholder collaboration case examples in Chapter 6.

It is suggested that a concerted effort is needed to embed this shift of perspective toward a new mental paradigm based on a deeper understanding of the process of life in as many minds as possible in order to reach the tipping point for global transformation.

A deeper understanding of how to invigorate the human competency to more consciously co-create 'patterns of aliveness' underlies the shift in thinking towards pattern recognition and more importantly, towards a more conscious stewarding of 'patterns of aliveness.' The following section takes up this challenge. Based on the propositions outlined above and the deep dive into a systems view of life, it suggests six patterned and interacting organizing principles of life. It argues that taking these principles into account in leading transformative change can enhance human competencies. The principles may serve more broadly as guiding support for collectively co-creating 'patterns of aliveness' that empower people in socio-ecological systems to self-organize for a more sustainable future.

These principles, which seem equally important and which support each other in their effect on aliveness, are not necessarily inclusive of all possible characteristics that give life to systems. However, they synthesize major treatments of 'aliveness,' drawing together central characteristics that should be understood and built into initiatives by observers and change makers of transformative change process. They also need to be taken into account strategically when designing large-scale change interventions. The following section explores these organizing principles, noting that each concept is complex and connected to the others. 'Patterns of aliveness' emerge as a result of the joint presence and interaction of these principles.

5.4 The Six Aliveness Enhancing Principles

Many authors have used living systems theory's insights to propose principles that can inform better human co-creation (Weber, 2013), guide an economy in service of life (Fullerton, 2015), foster innovation, help leaders to become better partners of systemic change (Choi et al., 2001; Hammer, Edwards and Tapinos, 2012), model organizational cultures according to integral or systemic principles (Laloux, 2014), or allow for organizing the commons as cornerstone of the societies of the future (Bollier and Helfrich, 2012, 2015; Weber, 2013). These authors also emphasize the danger of the human mind's reductionist tendency to lose sight of the incomprehensible dynamic complexity of life. Weber (2013), for example, suggests that such principles should reflect an understanding of life as interconnected meshwork of which human beings are part. Rather than defining a solution for a better future society, or the detailed outcome of a desired transformation process, he proposes that it is more important to understand which conditions or structures enable life to thrive or – in the context of the above propositions - enhance 'patterns of aliveness'.

The idea of Enlivenment does not specify explicit outcomes or norms for what an enlivened society looks like. Rather, it identifies the overarching principles and attitudes that can foster the emergence of open, mutual, and cooperative processes. We do know that any new principles should be compatible with our new understanding of

biological reality. Still, it is important that we not search for «laws» – universal, invariable rules that apply to everything, as the Enlightenment paradigm would insist – but rather that we search for general parameters, guidelines, or attitudes that might foster an enlivening behavior (Weber, 2013, p. 32).

This constitutes a challenge: whatever organizing principles, general parameters, or guidelines one extracts from the varied insights of living systems theory approaches elaborated above, they need to be general enough to not prescribe behavior or solutions, yet comprehensible and concrete enough to guide action, transformation and adaptive behavior. **Moreover, to be useful for stewarding the large-scale transformation that lies ahead of humankind, they should guide to recognize functional or dysfunctional patterns and help move patterns towards higher degrees of aliveness in a negotiated dynamic balance between and among nested systems in a global society.** To become practically useful for collective sense-making and collective co-creation, they need to invigorate and strengthen inherent human competencies.

The term *principle* is therefore understood according to the Oxford Dictionary as a “fundamental proposition that serves as the foundation for a system of behavior” and that informs but does not prescribe thought and action. Instead it can have “numerous special applications across a wide field.”²⁴ The organizing principles suggested here are intended to mirror life’s wisdom in that they engender countless different applications. The purpose of the principles is to translate the insights from living systems theory and the propositions that have informed the emerging ‘patterns of aliveness’ theory into a conceptual framework underpinning approaches to leading transformative change collectively. It may also offer a lens for recognizing functional and dysfunctional patterns and form a basis for planning adaptive action.

It has been argued that, in the Anthropocene, the future of the planet hinges on the human capability to partner with life and evolutionary processes to create nested systems of sufficient aliveness. The principles suggested here, therefore, need to reflect models of aliveness as a patterned occurrence; rather than listing factors, the principles form a patterned relationship by becoming a structure of what Alexander (2002a) calls mutually supportive centers. **Aliveness, or the degree and quality of life that emerges, then, is not a result of a linear logic, nor can it be attributed to neatly delineated factors. It is a consequence of the consciously invigorated relationship between these principles.** It is their interaction that creates the conditions for ‘patterns of aliveness’. The unfamiliar proposition here is that they ‘help each other’ come alive, in Alexander’s terms, and the patterned interaction that results becomes a structure that helps aliveness to emerge.

Weber (2013) cites the biological perspective that “the organic realm is the paradigm for the evolution of freedom. Natural principles may impose certain necessary parameters to life, but those principles are nondeterministic and allow for significant zones of creativity and autonomy” (p. 40). The organizing principles suggested here should reflect such a

²⁴ Source (accessed on 5th May 2017): <https://en.oxforddictionaries.com/definition/principle>.

paradoxical balance between guidance and creative freedom. They also need to match another feature of life that Bateson (1979) called the 'patterns that connect'. **The resemblance of patterns in smaller and larger systems often goes unnoticed in the realm of large systems transformation, but it may become a key to understanding how to steward multiple smaller aliveness patterns that grow into large systems change.** If so, the aliveness enhancing organizing principles suggested here must be valid not only in general for the process of life, but they should also be transferrable to various levels of human communities, from the individual to organizations, societies and global agency for a transformed world.

This dissertation suggests that understanding and attending to the six principles identified supports leading transformative change by fostering more constructive and life-compatible human co-creation. It suggests that they can potentially engender 'patterns of aliveness' in socio-ecological systems. The organizing principles are summarized in Table 6 with reference to the propositions as well as the literature that inspired their conceptual origins. The table also proposes hypotheses for how these principles can be enacted in human interaction systems. Fig. 4 shows a graphic representation of the conceptual framework. This is followed by a more detailed explanation of each principle.

Table 6: The conceptual framework - aliveness enhancing principles and sources (Created by the author)

Principle	Description	Hypotheses for human interaction systems	Selected literature sources
<p>1. Intentional Generativity: Life is intentional.</p> <p>Reference to propositions: 7, 8</p>	<p>The urge of life to expand and create future; capacity of natural organisms and systems to renew, replenish, and restore themselves, and become resilient in order to stay alive.</p>	<p>Invigorating the human capability to collectively shape future enhances 'patterns of aliveness'.</p>	<p>Alexander (1979, 2002a,b) – Degree of life emerging from and contributing to wholeness Erickson (1953) – Generativity as taking care of the next generation Finidori et al. (2015) – Convergence towards an ideal future state Fullerton (2015) – Regenerative economy Jacobs (1961) – Generation of vitality in cities through purpose-seeking McDonough and Braungart (2010) – Constant process of regeneration Swanson and Miller (2009) – Purpose as core driver of living systems Weber (2013) – Urge of life towards aliveness</p>
<p>2. Permeable Containment: Life thrives on identity and permeable boundaries.</p> <p>Reference to propositions: 2, 9</p>	<p>Definitional boundaries or enclosure of living systems ensure containment and give identity; sufficient ability to bring new energetic inputs in and release old ones.</p>	<p>Engaging the human desire for belonging, identity and meaning-making exchange and collaboration enhances 'patterns of aliveness'.</p>	<p>Alexander (1979, 2002a) – Space held by organizations Ashby (1962, 2011) – Laws in nature as constraints Capra and Luisi (2014) – Meaning-making in systems through identity formation Hanleybrown et al. (2012) – Identity emergence through shared value creation Helgesen (1995) – Participatory meaning-making activities create ownership Jacobs (1961) – Role of community identities Kauffman (2016) – Functional interweaving of entities in nature; role of collaboration Maturana and Varela (1987) – Structural coupling Prigogine (1996) – Dissipative structures Swanson (2008) – Permeable boundaries core to living systems Weber (2016) – Nature as physically distinct, but mutually transformative entities</p>
<p>3. Emerging Novelty: Life is generously creative.</p> <p>Reference to propositions: 8, 10, 11</p>	<p>While maintaining overall containment life is constantly unfolding novel pathways and new identities. Integrally and inextricably linked with life is the creation of novelty through invention, adaptation, learning, exaptation or other features that engender innovation</p>	<p>Building on the human desire to venture into the unknown and creating new pathways enhances aliveness.</p>	<p>Bohm (1952, 1980) – The explicate emerging from the implicate Capra and Luisi, (2014) – life constantly creates new pathways Gilligan (1982, 2002) – Emergence of novel thinking Gould and Vrba (1982) – Exaptation and adaptation Holling (1973) – Ever more complex emergence of identities IDEO (2008) – Collaborative innovation processes Kohlberg (1976)– Adult development into more complex thinking Scharmer (2007) – Sensing the future Stamm (2008) – Inspiration and contribution in innovation Weber (2016) – Essential creativity of nature Wilber (1998, 2002) – Emergence of complex thinking Zohar and Marshall (1994) – Pools of possibilities with no predictability</p>

Principle	Description	Hypotheses for human interaction systems	Selected literature sources
<p>4. Contextual Interconnectedness:</p> <p>Life requires diversity in constant adaptive communication.</p> <p>Reference to propositions: 1, 3, 5, 6, 8, 9</p>	<p>Life operates as a vast communication network engendering constant contextual interaction in endless feedback-loops; it benefits from complexity in diversity.</p>	<p>Leveraging the human capability to thrive on diversity and act in networks of networks in dialogue enhances aliveness</p>	<p>Boisot and McKelvey (2011) – Learning at the edge of chaos Capra (1996) – Life as interconnected network Folke et al. (1996) – Negotiated dynamic balance of functional patterns in nature Hicks and Waddock (2016) – Change of memes through multiple perspectives Isaacs, (1999) – The importance of dialogue or changing interaction patterns Jacobs (1961, 2002) – Contextual collaboration in mutual support Luhmann (1990) – Social patterns as shared contexts of meaning Midgley et al. (2013) – Contextual problem structuring to understand systems dynamics Ruesch and Bateson (2006) – Constant flow of communication Waddock (2015) – Visibility of connectedness through acknowledging multiple perspectives Weber (2016, 2013) – Self-referential communication patterns, meaning-making connections Wheatley (1999, 2001) – Relationships as core organizing features of life</p>
<p>5. Mutually Enhancing Wholeness:</p> <p>Life operates with integrated collaborative entities.</p> <p>Reference to propositions: 4, 5, 9</p>	<p>Life has an inherent urge to create small and large-scale wholeness; it emerges from wholeness and contributes to it. Living systems are both nested and complementary.</p>	<p>Tapping into the human capability to sense wholeness, as well as engage with a bigger picture, the larger story, and the greater system enhances individual and systems aliveness.</p>	<p>Alexander (2002b) – Life emerges from wholeness Ashby (2011) – Wholeness and self-organizing systems Bastolla et al. (2009) – Ecological interaction networks Bohm (1980) – Reality emerging from the wholeness of an implicate order Donaldson and Walsh (2015) – Collective value contribution Fullerton (2015) – Complex notion of wholeness Jacobs (1961) – Attention to whole entities in city and community development Sahtouris and Lovelock (2000) – Mutual consistency of holons Swanson (2008) – Holistic approach in living systems Weber (2013) – Individual entities exist in relation to the whole</p>
<p>6. Proprioceptive Consciousness</p> <p>Life emerges from meaning-making cognition.</p> <p>Reference to propositions: 2, 5, 6, 12</p>	<p>Essential role of cognition in the process of life; the ability of life to become aware of its emergence, evolution and interdependence</p>	<p>Raising the human capability for reflection in action and the respect for the integrity of all life enhances aliveness</p>	<p>Bohm (1980, 1996) – Manifest reality arises from thought Varela et al. (1992) – Ethical Know-How Joos et al. (2013) – Perception and appearance in a quantum world Weber (2013; 2016) – Mind is embodied, subjectivity and objectivity belong together Varela (1999) – Perception as co-creator of reality Capra (1996) – Cognition and knowing as the process of life Varela et al. (1992) – Accessing deeper levels of consciousness Krishnamurti and Bohm, 1986 – The existence of a one consciousness Isaacs, (1999) – Coherence in collective thinking processes</p>

5.4.1 Principle 1: Intentional Generativity

Life Is Purposeful and Grows Ever More Complex

*The first principle rests on the insight that life is purposeful. **Intentional generativity** refers to the urge of life to expand and create a future and the related capacity of natural organisms and systems to renew, replenish, and restore themselves and become resilient in order to stay alive. For human interaction systems, this means that invigorating the human capability to collectively shape the future enhances ‘patterns of aliveness’.*

It is important to acknowledge the insight from living systems theory that the generative force of life – across all forms of life - is purposeful and intentional in maintaining and enhancing the conditions for life to thrive. The same *intentional generativity* is reflected in the urge of human beings to create and implement a more sustainable future and maintain the conditions for aliveness for future generations. Invigorating this human capability can be a driver for co-creating, maintaining or rehabilitating global and local *patterns of aliveness* while making progress in a mix between disruptive innovation and continuous iteration. Furthermore, the transformative change in thinking and acting that overcoming the world’s challenges require, and that is anchored in the 17 Sustainable Development Goals, means forming many interlinked temporary, goal-oriented systems of human interaction. These, as Waddell (2016) remarks, can be seen as intentional change systems composed of many cross-institutional, cross-national, and also institutional change processes. The idea of generativity acknowledges life’s drive for life (Weber, 2016) as well as the purposeful and intentional co-creation of complex patterns of increasing aliveness (Kauffmann, 2016). Such generativity, according to Finidori et al. (2015), “points at emergent structure and behaviors that occur in complex adaptive systems” (p. 12). It refers to the “onset of a new level of functional properties in a system” (p. 12), not necessarily by working directly on the problem, but rather by focusing on its underlying structure system. With this focus on structure, the system becomes what Finidori (2016), following Jones (2014), terms purpose-seeking, i.e., attempting to “converge towards an ideal future state, and upon attainment of any of its intermediate goals [seeking] another goal which more closely approximates its ideal” (Finidori, 2016, p. 16: citing Jones, 2014). Swanson and Miller (2009) suggest that purpose in living systems can be defined as a “preferred hierarchy of values from which decision rules emerge” (p. 142). Hence, purpose-seeking allows for creative, emergent (generative) approaches that move the system towards greater functionality over time (Finidori et al., 2015).

In this context, empowerment can be seen the enhanced ability of people to self-organize their living conditions collectively. Empowered people – individually and collectively - are resilient enough to renew, replenish, and restore themselves and their communities. Conversely, the more severe the power differences, the less likely a dynamic balance of a functional pattern can be achieved or maintained. Hence, power differences lead to negotiations in order to create new balances or more functional patterns of interaction (De Dreu and Van Kleef, 2004). A negotiated balance between the interests of individuals and

the wellbeing of the whole is a feature of life – be it in the natural environment or in social systems.

The complexity of the sustainable development challenges suggests that key to the future is to grow multiple narratives and many different approaches that are based on an overall goal and oriented towards negotiated ‘patterns of aliveness’. **For leading transformative change, like the one envisaged in the SDGs, the principle of *intentional generativity* translates into peoples’ ambitions to jointly drive future possibilities towards a goal that benefits all.** The goals and targets specified by the SDGs provide this purpose- and values-based framework for the world and potentially serve as a guide towards the development of initiatives that ‘live’ beyond the specific intents of their initiators as they gather momentum. Consciously building on the human urge to make a difference for the better is a cornerstone for gradually building the multiple transformation systems the world requires. Yet life balances the intention to generate life in increasing complexity by forming systems within systems that allow for containment, belonging and identity. This leads to the second principle.

5.4.2 Principle 2: Permeable Containment

Life Thrives on Identity and Meaningful Belonging

*The second principle rests on the insight that life thrives on identity. Boundaries of living systems must be sufficiently enclosed to ensure containment and give identity. At the same time, they must not be so closed that it is difficult to obtain new energetic inputs and release old ones. **Permeable containment** builds and maintains identity, and holds generativity in check while still allowing for development. For human interaction systems, this means that engaging the human desire for belonging, identity and meaning-making exchange as well as collaboration enhances ‘patterns of aliveness’.*

All living systems need sufficient containment and boundaries for cohesive identities to emerge. Weber (2016) emphasizes that, in nature, objects are physically distinct, but also in relation to, and mutually transformed by each other. He notes that the emerging patterns are composed of contained structures that preserve and repair themselves and there is an ordered cooperative interplay that creates and holds the dynamics of existence. Hence, he concludes, life is a process of identity creation. Only the formation of identities makes collaboration between living systems possible, desirable, and functional. Kauffman (2016) suggests that Darwin tremendously underestimated the role of collaboration. He states:

Were we to better understand this functional interweaving, how it comes to be and continues to become, and be the ever-evolving balance of nature whose members are ever-changing, as life ever ‘finds a way’ to enter its Adjacent Possible, we might find lessons to apply to the ongoing historical becoming of human socially interwoven life, where we too collaborate, and compete, grow, and wither in myriad ways as individually and members of very many overlapping organizations on all scales (p. 259).

Likewise, Capra and Luisi (2014) explain that systems are meaning-making through identity formation. They suggest that such formations create a feeling of belonging and develop identity in relationships. This concept illustrates the close inter-linkages between Principle One and Two. Ashby (2011), in articulating the ‘law of requisite variety’ further notes that “every law of nature is a constraint” (p. 202) and that without such constraints chaos would ensue. Permeable containment has sufficient restraints and boundaries to allow cohesive identities to emerge with new inputs and outputs as needed. While learning occurs at the boundaries of identity, predictability is associated with the stability provided by constraints or boundedness – and living systems are adaptive to the extent that their constraints permit (Ashby, 1962; Lewin, 1999).

For leading transformative change around SDG implementation, this concept translates into the need to acknowledge organizational or community identity, manage reliable and transparent step-by-step transformation processes, ensure inclusivity in decision-making, and find transparent governance structures that work for all (Kuenkel et al., 2011).

A whole body of literature, particularly in development cooperation, but also in leadership, hints to the importance of participation as a way of ensuring that people are better at implementing that which they have helped to create (Helgesen, 1995). In addition, meaning-making activities create a sense of belonging and form identities. This understanding is crucial for the global sustainability challenges, irrespective of whether the goal is to create responsible supply chains, develop innovative technology for climate adaptation, or coordinate better water resource management systems.

This dissertation suggests that keeping the principle of permeable containment in mind would inform ways of leading transformative change collectively through leveraging change process architectures that build meaning-making identities. This would engender trust, help identification by evidencing transformation results, and still allow for learning and adaptation. The issue of permeability in containment is crucial. In living systems, contained identities need to change, adapt, and maintain an overall cohesiveness, as Maturana and Varela (1980) mention with regards to structural coupling. If a system identity has too little containment, it will dissolve; if the identity becomes too rigid, it loses its resilience and can’t survive. This is why the principle of *permeable containment* is closely linked with emerging novelty - the next principle.

5.4.3 Principle 3: Emerging Novelty

Life Is Generously Creative

The third principle of emerging novelty rests on the insight that life maintains containment but constantly unfolds novel pathways and new identities. The creation of novelty is inextricably linked with life through invention, adaptation, learning, exaptation, or other forms of innovation. For human interaction systems, this means that building on the human desire to venture into the unknown and create new pathways enhances aliveness.

Weber (2016) suggests that life is essentially creative; it constructs ever more complex structures, and creates novelty by avoiding prefigured pathways. Similarly, Capra and Luisi, (2014) state that life is highly flexible, always trying out new avenues and manifesting endless forms of creativity. Viewed through the lens of quantum physics, the principle of emerging novelty is essentially unlimited. Quantum systems are built on 'superpositions' (Zohar and Marshall, 1994). This means that a variety of possible realities can emerge (see principle of *intentional generativity*), and all possibilities exist at the same moment in an undistinguished pool of possibilities with no predictability. Determining what finally manifests as thought, speech, or action as a living system, or in the human realm, is almost a matter of sensing the future (Scharmer, 2007), as quantum systems tend to manifest into the most stable energy state possible (Zohar and Marshall, 1994). The physicist Schroedinger (as cited by Ho 1944, p.24) suggested that "living matter evades the decay to equilibrium." In his view, this process of constant interaction, adaptation to circumstances, and generation of new pathways or new identities creates positive energy, what Schroedinger ultimately called positive entropy or negentropy. This way of taking in energy to stay ordered in new ways and to stave off death is a fundamental aspect of what it means to be alive. Ecological systems experiment with novelty, because new and more complex identities keep the whole intact and resilient (Holling, 1973).

Emerging novelty also grows beyond intentional generativity and towards a desire to create new life and to maintain the conditions for life to thrive. A patterned whole is never stable but always evolving. Novelty created in subsystems increases the generativity of the whole in a vast system of interconnections that keep checks and balances in place. Continuously emerging novelty fosters sufficient newness and innovation to keep a system changing, developing, and moving in the desired direction, while recognizing that dynamic, vital, complex systems will never reach a stable 'end state.' A new understanding of 'growth' is therefore needed. Growth might be considered an essential aspect of aliveness or vitality. Rather than 'growth' as commonly understood (e.g. getting bigger), 'growth' in nature takes the form of abundance, manifested as greater complexity with more diversity of life forms (Weber, 2013). While adults and mature ecosystems can be vital and flourish, they do not generally continue to 'grow' (in the sense of getting ever taller or gaining weight) but rather continue to 'develop.' Adult development theories (Kohlberg, 1976; Wilber, 1998, 2002; Gilligan, 1982; 2002; Torbert, 2004) similarly suggest that cognitively and morally successful individuals tend to develop more complex thinking patterns with broader perspectives.

For leading transformative change collectively this means that invigorating a zest for novelty and fostering the ability to recover from disturbances are essential to transform human societies and overcome global challenges. More practically, the process of setting goals, identifying indicators, and monitoring results must include unexpected emerging novelty and should not depend on the idea that a stable state can ultimately be reached. **Hence, success in leading transformative change could be redefined: instead of indicated by the result reached, it could be seen as potential invigorated and the capacity of a system as a collective of actors to self-organize and innovate around increasing 'patterns of aliveness'.**

Transformative change through SDG implementation must thus be open to new solutions,

support social and technological innovations, and be able to change course when needed. Scharmer's Theory U is essentially built on the capacity of a group of people to restructure their attention and subsequently their collective pattern of thought and action (Scharmer, 2007) to create novel approaches that benefit individuals and the collective (Stamm, 2008). In light of the global challenges, as individuals and teams carry more and more responsibility in complex multi-actor change initiatives, this capacity to jointly become inventive is even more important. Humans need novelty to be engaged and to grow, and ecosystems need novelty within their dynamic nature to keep them alive and vital. Hope and images of a better future that includes cultural, technological, social, and other forms of novelty, drive people to act constructively rather than destructively, as they might under oppressive conditions that shrink their feeling of aliveness.

Hence, the principles of *intentional generativity*, *permeable containment* and *emerging novelty* support each other in creating 'patterns of aliveness'. To avoid dysfunctional patterns, life operates in contextual interconnectedness with a constant communication flow. This leads to the next principle.

5.4.4 Principle 4: Contextual Interconnectedness

Life Requires Diversity in Constant Reciprocal Communication

The fourth principle of contextual interconnectedness refers to life's vast communication network that engenders constant interaction, reflection, and reaction in endless reciprocal feedback-loops, and benefits from complexity in diversity. It fosters the ability to change and evolve as situationally appropriate, either by growing and becoming more complex, or by declining. Contextual interconnectedness among diverse sub-systems balances the whole and the individual. For human interaction systems, this means that leveraging the human capability to thrive on diversity and act in networks of networks in dialogue enhances aliveness.

The human capacity to converse, interact, gain insight, communicate, adapt, and adjust behavior accordingly, can be seen as a manifestation of the principle of contextual interconnectedness in diversity. Vital living systems are comprised of inextricably interdependent parts in constant communication (Ruesch and Bateson, 2006). Weber (2016) suggests that life patterns are self-referential and recursive; their interconnectedness provides constant feedback and influences the overall arrangement of patterns. Life creates somewhat autonomous subsystems that then feed back into the whole (Weber, 2016), in a communication system that enables the system to 'talk to itself'. Even at the quantum level all life, including living and non-living systems, is connected (Capra, 1995; Capra and Luisi, 2014; Weber, 2013, Wheatley, 1999; Zohar and Marshall 1994; Bohm, 1980). But also the social world is built on relationship patterns as well as a shared context of meaning sustained by continuous conversations (Luhmann, 1990). Wheatley (1999) notes that relationships are a core organizing principle of life and communication invigorates and leverages networks for change. Capra (1996) suggests that life is a highly interconnected network in constant communication and interaction, with recursive feedback loops that facilitate a continually adaptive process. Weber (2013) argues that interconnectedness is "a source of existential

meaning that is continuously produced by relations between individuals, producing an unfolding history of freedom” (p. 12). In this view, the ‘commons’ are important as a space of interdependency between humans and humans, and between humans and nature. Thriving commons are shared spaces, in which mutual interdependencies, connectedness, and symbiotic synergies provide a context for the individual entity embedded in a diverse, adaptive, interconnected, and generative whole (Weber, 2013).

Connectedness, in the form of exposure to multiple perspectives, is also a core driver of the change of memes (Waddock, 2015). Midgley et al. (2013) therefore suggest that collectives able to engage in ‘problem structuring’ to understand the dynamics that keep a system dysfunctional are better able to lead transformative change. **Like natural systems, human systems, including multi-stakeholder collaboration for SDG implementation, need to balance autonomy with the rules and relational patterns of their larger system.**

A key to the negotiated dynamic balance of functional patterns in nature is diversity. Diversity is crucial in resilient ecosystems (Folke et al., 1996) as it allows for systemic resilience combined with complexity (Holling, 1973; Folke et al. 2010). **Similarly, large system change initiatives for sustainability transformation become more resilient as they incorporate diverse elements, approaches, and ideas in multi-stakeholder collaboration** (Kuenkel, 2015, 2016). In nature, when one part of a diverse ecosystem fails, other ‘actors’ step in, or connections and pathways form to provide overall systemic balance (Hollings, 1973). The same applies to global transformation efforts. **For leading transformative change collectively this means that diverse approaches and initiatives are needed that can complement each other.** This may lead to more overall ‘success’, even if some efforts fail. Healthy, vibrant systems and initiatives provide enough diversity that disturbing one or two elements will not endanger the system. Diversity shields systems by providing resilience, allowing them to flourish even in the face of setbacks and obstacles (Folke et al., 1996; Folke et al., 2010). Jacobs (1961) similarly argued that diversity was the core principle of successful, vital, life-filled cities. Calling diversity a ‘ubiquitous principle,’ Jacobs (1961) argued that city spaces required multiple “uses that give each other constant mutual support, both economically and socially” (p. 14).

Nature also deals in abundance, diversity, and a form of contained yet evolving wildness (Weber, 2013). In preserving diversity and multiple feedback loops, life is not at all efficient in the sense the term is used in today’s businesses, economic institutions, and societies. Life invests in many possibilities, and only a few persist through adaptation and exaptation (Gould and Vbra, 1982). This process is extremely effective in creating, maintaining, and healing ‘patterns of aliveness.’ Flourishing natural systems, including human ones, display variety, diversity, and ‘wasted’ resources. Human development is analogous to the co-evolutionary, synergistic (cooperative/ or collaborative), symbiotic, and interdependent development of ecological diversity in flourishing natural settings.

Many authors (Berry, 1999; Elgin, 2001; Capra, 2003) have argued that in successful change initiatives, diversity must be seen as an asset and endeavors must belong to the collective. The importance of dialogue in contributing to quality communication has already been recognized in the corporate world (Isaacs, 1999; Wheatley, 1999; Jaworski, 1996). The

'patterns of aliveness' perspective recognizes the inherent complexity of the world, including social systems and organizations, and the increasing communication and feedback features that characterize the new media (Haythornthwaite, 2002). The Internet and social media have intensified the understanding of life as a highly interconnected network in constant communication with recursive feedback loops. In globally distributed relationships (Oshri, Van Fenema and Kotlarsky, 2008; Oshri, Kotlarsky and Willcocks, 2015), structured dialogue allows system participants to understand what works and what doesn't (Kuenkel et al., 2011; Kuenkel 2016). It allows them to collectively identify the relationships, rules, and regularities that make human interaction patterns come alive.

It is important to explore how to accelerate offline and online communication towards faster collective sense-making and narrative building that help people own a more 'alive' future. Evaluation and measurements currently used as tools for feedback loops need to be reinvented in service of 'patterns of aliveness' (Rouse and Putterill, 2003). Yet, the effectiveness of communication feedback loops that draw on *contextual interconnectedness* in creating and recreating 'patterns of aliveness' is largely dependent on the relationship between subsystems and larger systems, or the parts and the whole. This leads to the next principle: nested wholeness.

5.4.5 Principle 5: Mutually Enhancing Wholeness

Life Operates with Integrated Collaborative Entities

The fifth principle of mutually enhancing wholeness refers to life's inherent urge to create small and large-scale wholeness, and to emerge from wholeness (Alexander, 2002b). Systems are nested and arranged complementarily into larger wholes, and provide coherence and orientation. A whole is always more than the sum of its parts. Its quality cannot be fully understood by breaking it down into fragmented parts. For human interaction, this means that tapping into the human capability to sense wholeness and engage with the bigger picture, the larger story, and the greater system enhances individual and systems aliveness.

Life consists of integrated entities that constitute identifiable 'wholes' in mutual consistency. Living systems need to be considered holistically, rather than just by looking at their parts as science and planning do today (Swanson and Miller, 2009). Swanson (2008) defines living systems as integrated wholes that are at the same time purposive open systems. From a biological perspective, this includes a system's ability to maintain a dynamic but steady state with some level of complexity that involves structural and 'essential decider subsystems.' Components interact holistically and cannot necessarily be teased into component parts. They cooperate and compete, integrate and disintegrate. For Swanson (2008) living systems theory contends that forms of hierarchy and differentiation occur among the elements of a system that co-creatively emerge into higher level and more complex living systems. Nestedness, as one feature of wholeness, refers to how different forms of structure and relationships connecting multiple levels of wholes. In an ecological system, nestedness could refer to the integration of species-sites systems and the distribution of species in space, or the species-species interaction network (Bastolla et al., 2009; Atmar and Patterson, 1993). A

system is like a matrix or meshwork of multiple nested subsystems. However, the health of the whole, not just the parts, is essential to vital, 'alive' human and natural systems.

Authors inspired by living systems theory and quantum physics emphasize the importance of developing the human faculty to sense and understand complex wholes rather than focusing on fragmented objects or atomized parts (Fullerton, 2015; Weber, 2016; Alexander, 1979; Jacobs, 1961; Bohm, 1980). This is why both Alexander (1979) and Jacobs (1961) focused on whole entities such as buildings, communities, or neighborhoods rather than simply their constituent parts.

Bohm (1980), and Alexander (2002b) offer relevant conceptual approaches for understanding the principle of *mutually enhancing wholeness*. Alexander's (2002a) concept of pattern language suggests that "Life comes from the particular details of the way centers in the wholeness cohere to form a unity, the way they interact, and interlock, and influence each other" (Alexander, 2002a, p.106). Though Alexander argues that the components of a given pattern language can be added in a step-by-step process, multiple interacting parts ultimately need to be integrated systemically for the 'whole' to become a space in which life flourishes. He explains that wholeness is created by 'structures of great subtlety,' at the same time, he insists that "the wholeness comes first; everything else follows" (Alexander, 2002a, p. 86). He assumes an intricate relationship between a structure (physical or mental) and its degree of wholeness.

Structure, then is the containment (hence the principle of *permeable containment*) through which wholeness is enacted, or from which it flows. Alexander concludes that we cannot understand how the world works unless we pay attention to the structure of wholeness (Alexander, 2002a, p. 93). **For conceptualizing leading transformative change collectively this means that wholeness is enacted, not created; it is accessed, not produced; it is animated, not managed.** But since it is constructed or reconstructed, natural or human-made structure can enhance or reduce wholeness. Jacobs (1961,) identifies wholeness as a vital part of successful urban design, stating "A city's very wholeness in bringing together people with communities of interest is one of its greatest assets, possibly the greatest" (p. 119). Successful neighborhoods are 'physical, social, and economic communities' (Jacobs, 1961, p. 121), similar, in a sense, to ecosystems. Weber (2013) argues that "the individual can only exist if the whole exists, and the whole can only exist if individuals are allowed to exist" (p. 32), in a relationship that ecologists call 'interbeing' (Weber, 2013, p. 37). There are synergistic, symbiotic, and epigenetic (co-evolutionary) reasons why biological systems thrive and why they cannot retain their vitality when dismantled into their component parts (Dupré and O'Malley, 2007). Weber (2016) explains that nature has a drive to form coherent wholes while operating in a multitude of diverse cooperating entities. He argues that the multiplicity of nested subsystems is inextricably connected with life as a whole. Complexity and diversity, as enacted by the principle of *contextual interconnectedness* and *emerging novelty*, become the connecting thread to *mutually enhancing wholeness* in a meshwork of relationships from small to large.

Living systems are constituted in a way that the parts only grow and function in the context of the whole. No part can exist independently or remain unaffected if another part changed. To

illustrate, quantum physics challenges the notion of separately existing entities. Instead it assumes a single structure of invisible links between different entities, so that they make up a 'complete whole' (Bohm, 1980, p. 175). Each element of the unbroken whole reveals its properties in context depending on its links; much like body organs reveal their properties depending on their integration into the whole body. Thus, an element's actualization cannot be separated from its circumstances or its connection to wholeness. Thought and language operate in a similar way. They cannot be separated from their context. While language is already a manifestation of thoughts that can only be understood contextually, thought processes are unpredictably embedded in their potentiality, in the context constituted by experience, events, and memories (Zohar and Marshall, 1994, p. 69). Quantum physics holds another insight about the principle of *mutually enhancing wholeness*. It suggests that events that are separated in space and time, without any physical or other perceivable connection, can be seen to act together. It is as if they knew about each other and the larger whole they are connected to, although no causal factor or information transfer can be established (Bohm, 1980). All these phenomena can best be understood by assuming an underlying totality or an unbroken wholeness that gives rise to this behavior, from which life emerges, and to which life contributes.

This wholeness is a structure of connections not commonly visible to human perception. According to Bohm (1980), the entire universe has to be thought of as interlinked in such a structure of unbroken wholeness. To illustrate, he suggests imagining an aquarium that contains plants and fish (Bohm, 1980, p. 187). Two video cameras record it from a different angle. The two videos are projected on two different TV screens. This shows the 'unbroken wholeness', or the aquarium, from two different perspectives. If one did not know about the whole, one would observe two scenes, which seem to be connected in a mysterious way. A movement on one screen would be accompanied by a different, but corresponding, movement on the other screen. It is not that one movement would cause another movement on the other screen. It is rather that both partial realities (the screens) refer to a totality (the aquarium) that forms a common basis for both. The way the world is commonly perceived, and the way entities, events, times are measured, is similar to observing the partial realities on the screens. Assuming that the scenes on the screens are not connected with each other would make it impossible to understand the whole, or the "holomovement" as Bohm (1980, p. 150) coins it. He sees this holomovement as an unbroken and undivided totality of constant movement, constant change, constant unfolding and enfolding of entities that are mutually linked. Sahtouris and Lovelock (2000) would suggest that such entities exist in mutual consistency. No matter what partial aspect observers see, all forms of a holomovement are merged and inseparable. Seeing the world only on the apparent level elides the underlying whole, making reality appear to be an assemblage of more or less connected fragments without an underlying deeper connection.

With regards to leading transformative change in the context of the Sustainable Development Goals, the principle of *mutually enhancing wholeness* translates into finding ways of acknowledging that larger systems consist of multiple layers and overlapping systems. Complex systems, like complex ways of thinking, include simpler systems and ways of thinking (e.g., Wilber, 1998; 2002; Torbert, 2004). Like fractal patterns

(Mandelbrot, 1983), nested forms of interaction between global and local initiatives can be enhanced through connections at multiple levels and with multiple pathways. **For leading transformative change collectively this means that attending and contributing to wholeness in the sense of the next-level collective value (Donaldson and Walsh, 2015) will become increasingly important in the way large-scale transformation is designed.** Plurality, paradoxity, complexity, and constant change are becoming the norm in dealing with the global challenges. Actors in the corporate world, governments, NGOs and international organizations will have to manage complexity and ambiguity, with mutually supportive approaches.

In the context of the SDGs this would mean that as long as most actors keep the larger context in mind, work can begin anywhere in the system. The human capability to see and connect with a larger picture permits work at the scale, breadth and speed of change required to overcome the global challenges. **Understanding patterns that function for the whole as much as for the parts may be a continuously unfolding journey for humankind.** It will be essential to explicitly acknowledge the need for a continual negotiated dynamic balance between subsystems and larger systems.

Human consciousness plays a crucial role in this process. Bohm (1980) states that thought create the impression of separateness. It gives rise to further fragmentary thinking. For example, the perception of scarcity can lead to conflicts, which reinforce fragmentary thinking. According to this fragmented worldview each person struggles individually to fulfill himself/herself and seek security and peace (Bohm, 1996). Yet, although it feels as if consciousness is individual and thought transferred only through communication, thought is part of a proprioceptive consciousness with a much wider span: "Consciousness is shared by all human beings" (Krishnamurti and Bohm, 1986, p. 23). These insights lead to the sixth principle.

5.4.6 Principle 6: Proprioceptive Consciousness

Life Emerges from Meaning-Making Cognition

The sixth principle of proprioceptive consciousness refers to essential role of cognition in the process of life and is the ability of life to become aware of its emergence, evolution and interdependence. For human interaction systems, this means that raising the human capability for reflection in action and the respect for the integrity of all life enhances aliveness.

The relationship between the perception of *mutually enhancing wholeness* and the role of human thought established above suggests the need to explore the role of consciousness. Consciousness is seen here as a property of life in general, not only the result of human thought (Varela et al., 1992). The Santiago Theory of Cognition suggests that cognition, as a function of consciousness, is involved in the self-generation and self-perpetuation of living systems (Maturana and Varela, 1991; Capra, 1996). It includes perception (recognition), emotion (meaning or sensemaking), and behavior (agency). Maturana and Varela argue that all living systems are cognitive systems. The organizing activity of living systems at all levels of life is a continuous mental, or learning, activity, so that life and cognition are inseparable

(Maturana and Varela, 1980). Human consciousness is the most complex manifestation of this general property, and thus significantly impacts on the evolving reality.

Reflective consciousness refers to the ability of humans to become aware of the emergence, evolution, and interdependence of the systems in which they are embedded, including the ability to be aware of and reflect upon the self and system as changes are made in the deliberate hope of improvement. Proprioception has been defined by David Bohm (1980, p. 151) as an ability to observe thought while simultaneously thinking and acting, a deeper awareness of past and present moments, and also of thought processes. Such awareness generates openness to possibilities, the ability to look at things from many different angles without judgment, and compassion for the individual and the whole (Richards, 2001). In medicine, proprioception is considered the sixth sense and defined as the (more or less) unconscious perception of muscle movements in space. Proprioception describes the capacity of the body muscles to respond immediately with contraction to information (Mishra, 2011). It is essential in balancing the body's movement.

Bohm's (1980; Bohm and Hiley, 1993) quantum research allows him to propose that individual and collective thought must adopt this faculty with greater awareness of its consequences, if humankind is to overcome the global challenges. He suggests that the opaque relationship between mind and matter might be better understood by tracing a common feature thought and manifest reality: their shared origin in the implicate order. The implicate order provides a common ground (Bohm, 1980, p. 197) and consciousness is close to it. He argues that greater respect for the integrity and dignity of all forms of life could accelerate a shift in global human consciousness.

Like the indivisible world described by quantum physics (Joos et al., 2013), consciousness might be seen as the whole, of which human thoughts are partial manifestations. In this view, every thought process affects every other one, because thoughts are connected in the implicate order (Bohm, 1980). In Bohm's view, the visible world – the manifest explicate order - is a projection of this larger dimension - the implicate order. "The actual structure, function and activity of thought is in the implicate order" (Bohm, 1980, p. 204). The relationship between explicate and implicate order is one of necessity. Different arrangements of connectivity in the implicate order give rise to different forms of unfoldment or structural manifestation. Similarly, certain manifest structures around consciousness, like brain cells, are partly visible, but mental patterns and memory give rise to consciousness in a certain way. One moment constitutes the next in a constant rapid movement from implicate to explicate and vice versa.

Bohm assumes that the manifest content of consciousness is essentially based on memory, a kind of structure, which maintains a fairly constant form. He believes manifest structures, like cells, 'hold' a container for consciousness in a more stable form (Bohm, 1980, p. 205). In their dialogue on The Future of Humanity Bohm and the Eastern metaphysician Krishnamurti (1986) explore how human thought creates divisions between people and between people and the world. They suggest that people act on these mental divisions as if they were realities, resulting in polarization, difference, disparity, and conflict in the world. In his lectures on Ethical Know-How, Francesco Varela similarly noted that human perception does not

represent a pre-given external world, but co-creates reality (Varela, 1999). As humans perceive reality, they create it.

Hence, ethical expertise, for Varela, is not a skill to be acquired, but a natural state to be unearthed by removing the layers of obscured consciousness and seeing the interconnectedness of nature and the relationship between consciousness and manifest reality. He states: "The world we know is not pre-given; it is, rather, enacted through our history of structural coupling, and the temporal hinges that articulate enaction are rooted in the number of alternative micro-worlds that are activated in every situation" (Varela, 1999, p. 17). This view rejects any concept of the mind as an object located in the brain only. Mind is a process, a movement, not a static element. The brain is a specific structure that apparently helps this process, but mind is not confined to the brain. "Thus the relationship between mind and brain is one between process and structure" (Capra, 1996, p. 278), in a mutually conditioning interaction. Capra (1996) argues: "Mind [...] is immanent in matter at all levels of life" (p. 172). Cognition and structure, as much as mind and matter, can only be understood in conjunction, because they are tied together in an inextricable and reciprocal relationship (Bohm, 1980). Thought cannot be separated from context or from previous or past thought. The mind's most extraordinary ability is to make 'sense' - to create coherence, often perceived as wholeness.

The principle of *proprioceptive consciousness* captures this intrinsic relationship, between observation, cognition, sense-making, and reflection, which enables living systems and especially human beings, to develop a perception of wholeness. **For leading transformative change collectively, becoming aware of the dynamics of a *mutually enhancing wholeness* on the experiential level and noticing that the world is deeply interdependent and interconnected is a first step into accessing a deeper level of consciousness.** Krishnamurti and Bohm (1986) argue that this can only be achieved with the aid of awareness through observation, or mindfulness. **Awareness is here seen as the ability to observe a wide variety of phenomena, including outer manifestations such as nature, the environment, the social fabric, and the whole net of events and relationships, and also inner feelings, sensations, thoughts, and movements.**

Both Krishnamurti and Bohm (1986) believe that the future of humankind requires a transformation of individual and collective human consciousness to break the vicious cycle of fragmentary thought that creates further fragmentation and subsequently conflict. But while Krishnamurti (Krishnamurti and Bohm, 1986) assumes that transformation of individual consciousness is the way forward, Bohm (1996) adopts a different approach. He proposes a transformation of the nature of individual and collective consciousness through communication, and particularly through dialogue. **It is suggested here that leading transformative change collectively has at its core an enhanced capacity for individual and collective reflection.** In a sense, the collaborative approaches articulated in SDG 17, which calls for partnerships to meet the demands of the other SDGs, particularly suggest collective reflection. Understanding numerous points of view, perspectives, and paradigms is likely to be involved in change efforts, as much as taking a global perspective on needed change. **Making the co-construction of reality through thought and action more conscious can be considered a cornerstone for enhancing 'patterns of aliveness'.**

Meadows (1999) argues that the way actors in transformative change see the nature of reality is a key factor for sustainability transformation. Mindset is central to human agency, because it informs feelings, thinking, and acting.

Through a different lens, enacting the principle of *contextual interconnectedness* through of structured dialogues between multiple actors furthers the principle of *proprioceptive consciousness*. Chapter 6, the deep dive into multi-stakeholder collaboration, takes up this point. In Bohm's view, dialogue enables people to explore the entire thought process and subsequently collective change the way the process takes place (Bohm, 1996). Attentive dialogue fosters a coherent movement of thought. Ideally, a process of thinking together will emerge. This is a different flow of thought than the ordinary habitual thinking alone (Isaacs, 1999), which takes place when people defend their ideas and unconsciously continue to think in a fragmentary way. A collective thinking process could inspire coherent action guided by the needs of the whole rather than the fragmented interests of the individual. **In leading transformative change towards SDG implementation, structured forms of dialogue at scale could therefore form a collective pathway to deeper levels of consciousness, transform memory, and open new pathways of possibilities thought and action.** Thus, the principle of *proprioceptive consciousness* greatly supports the principle of *intentional generativity*, the principle of *permeable containment*, the principles of *emerging novelty*, the principle of *contextual interconnectedness* and the principle of *mutually enhancing wholeness*.

5.5 Conclusions: Stewarding Co-evolutionary 'Patterns of Aliveness'

Building on the conceptual deep dive into a systems view of life, this chapter suggested a new perspective on reality and future making. To answer Research Question Two and identify the essential features of living systems that enhance vitality, it captured the essence of the systems view of life in fourteen propositions and advanced an emerging 'patterns of aliveness' theory. It proposed six essential organizing principles that allow 'patterns of aliveness' in socio-ecological systems to emerge and thrive. It showed how these principles are interrelated and interconnected in their effect on the creation, maintenance, or rehabilitation of aliveness. It argued that these life-enhancing principles could function as a broader orientation for the practice of leading transformative change towards sustainability and derived a conceptual framework that includes the principles and advances hypotheses for how they could enhance human interaction systems. It established the relevance of these principles for leading transformative change by arguing that methodologies for navigating complex world-making and designing transformative systems change need to be anchored in a more constructive co-creation that partners with life and evolutionary processes. The chapter suggested taking this conceptual framework as a foundation for developing a novel approach to leading transformative change collectively.

'Patterns of aliveness', vitality, and resilience in natural or social systems are generative yet contained, and novel in unexpected ways. They consist of recursively-interconnected elements, continuously emerging, synergistic, mutually enhancing, and nested. They are

paradoxically both competitive and collaborative, and they emphasize abundance, even wastefulness, rather than scarcity (Finidori et al., 2015; Senge et al., 2015; Kuenkel, 2016; 2015). Aliveness is derived from wholeness and vice versa (Weber, 2013; Alexander, 2002a; 2002b), and is redolent with intention and purpose (Weber, 2013). This chapter argued that the emerging 'patterns of aliveness' theory, elaborated through the description of the organizing principles captured in the conceptual framework, could become a foundation for the conceptualization and practice of leading transformative change across boundaries of institutions at scale.

The United Nation's Sustainable Development Goals represent one of the first potentially impactful practical steps towards awareness of a fundamental global interdependency and interrelatedness. The goals encourage a shift in global consciousness as they pave the way for honoring the dignity of other people, no matter who or where they are, and according dignity to other natural systems (Holden, Linnerud and Banister, 2016). The capacity to observe while acting and to cultivate empathy for other stakeholders may become a cornerstone of leading towards globally and locally better functional patterns - towards 'patterns of aliveness' – individually, collectively, and at systems level. In complex transformative change processes, the ability to see why others act the way they act often brings stakeholders back into the collaborative journey (Kuenkel, 2016). On a more practical level, human-to-human empathy emerges when a new narrative emphasizes how human beings are integral parts of an interconnected world-system (Capra, 1996; Capra and Luisi, 2014). Raising awareness of how humanity is interconnected is key to implementing the SDGs. Making interconnectedness and interdependence with all of Earth an imperative of economic, business, and sustainability thinking equips humankind for a better future (Hicks and Waddock, 2016). The SDGs provide an aspirational map for the large system transformation (Waddell et al., 2015) needed for world's nations and denizens (of all sorts) to flourish in the future.

In that regard, working toward the SDGs means accepting humankind's place in the natural world. It means understanding and working in concert with the ways in which nature creates flourishing environments. Taking the emerging 'patterns of aliveness' theory and the six organizing principles as an inspiration for leading transformative change collectively leads to the following conclusions in response to Research Question Two:

- Developing the capability **of distributed and cross-institutional actors to collectively safeguard existing 'patterns of aliveness', actively maintain them, regenerate disturbed or compromised 'patterns of aliveness', and more consciously co-create new 'patterns of aliveness'** is paramount for sustainability transformations.
- Creating or maintaining 'patterns of aliveness' in multiple subsystems with attention to the relevant larger context means **fostering self-organization and experimentation around aspirational goals** while acknowledging that disturbance and disruptive innovation are means of shifting stuck dysfunctional patterns.
- Fostering novelty in large systems transformation around SDG implementation translates into **openness to new solutions, deliberate support for innovation**, and the capability to change course when needed.

- To bring the idea of aliveness to large system change, **it is important to affirm and enhance the life-giving properties of transformation systems at all levels of the system, from the individual to the collective to the larger system.**
- Hence, the core task in leading transformative change at scale can be defined here as **collectively stewarding co-evolutionary ‘patterns of aliveness’ in multiple systems.**

This returns the focus to most influential actor in the Anthropocene: people and their ability to find different ways of enacting future realities. Keeping the six principles in mind when leading transformative change through developing and implementing initiatives around the Sustainable Development Goals makes initiatives more effective and coherent. Such a conceptual shift in conceptualizing leading transformative change encourages a systemic perspective, which emphasizes the connection between the whole and the part in sustainability transformation. The global goals provide an example of collectively adopted guidance for addressing particular challenges. Meeting these goals requires recognizing the complex interplay between systemic interventions for the different goals and the actors and networks they touch. At the same time, **it is essential to translate the emerging ‘patterns of aliveness’ theory and the above-elaborated principles into the current, linear mode of institutional operations. Such ‘translation work’ is important, as the more linear structures and operational logics of the public sector, the corporate world, civil society and international organizations, do not match with the non-linear, systemic premises that underlie the principles.** It is not clear which approaches, models, tools and instruments will help enact ‘patterns of aliveness’ in a world of linear planning and implementation, where very few theories, approaches, tools, methodologies, and frameworks enable actors to look at the dysfunctional patterns of interaction that lie behind complex systemic challenges.

Many attempts have already been made to promote approaches and methodologies that implicitly or explicitly call on some or all of the six principles. They include shifting organizational structures (Robertson, 2015), collaborative innovation designs (IDEO, 2008; Hassan, 2014), and approaches to stakeholder governance systems as well as leadership that integrate systemic approaches to transformative change (Senge, 2015; Kuenkel, 2016). One such an attempt is the practice model, the Collective Leadership Compass (Kuenkel, 2015, 2016) introduced in Chapter 1. It emerges from and has been applied in successful complex multi-stakeholder initiatives as a meta-level guiding tool that facilitates more conscious collective sense-making and collective co-creation. **Chapter 6** explores how the practice model resembles the six principles and the notion of ‘patterns of aliveness’. Based on its application in two case examples, the chapter will elaborate how enhancing ‘patterns of aliveness’ helps build the capacity of a collective of actors to change their structure of attention, shift dysfunctional patterns through complex multi-stakeholder collaboration initiatives, and more constructively shape the future together.

Chapter 6:

6 Stewarding 'Patterns of Aliveness' in Multi-Stakeholder Collaboration

Deep dive into practice

Navigating complex change in multi-stakeholder collaboration: two case examples that illustrate complex transformative change

Chapter 6 takes the insights gained so far and investigates how to translate the emerging 'patterns of aliveness' theory developed in the previous chapters into the day-to-day management practice of leading transformative change in multi-actor settings. It seeks to answer the research sub-question:

III. How can the practice model be anchored in the essential features of living systems and how do they show up in complex multi-stakeholder collaboration processes?

The chapter argues that methodologies supporting transformative change need to inform a practice of stewarding multiple 'patterns of aliveness' from individual to large system levels. It suggests that navigating such complex change with multiple actors requires attending to human competencies that currently exist and to nurturing or invigorating new competencies. It explores how the practice model, the Collective Leadership Compass, is anchored in the emerging 'patterns of aliveness' theory and, in particular, how the six competency dimensions of the practice model relate to the six organizing principles of the Compass. This relationship will be captured in an additional layer of the conceptual framework supporting the emerging 'patterns of aliveness' theory.

Moreover, the chapter briefly highlights insights on collaborative change from the current body of literature on multi-stakeholder collaboration and argues that this emerging practice represents a possible pathway to transformative change. It introduces two examples of collaborative change processes with multiple actors, one at a local level and the other at an international level. Both case examples of transformative change are analyzed through the lens of the practice model as well as the emerging 'patterns of aliveness' theory with its six organizing principles. The chapter concludes with the insight that leading transformative change at the breadth and scale needed for transformation to sustainability requires actors to learn how to build well-functioning collaboration systems of cross-institutional actors. It suggests that collaboration is more effective when it enhances both the sense of aliveness of individual and the 'patterns of aliveness' within a system of actors.

The previous chapters have argued for the need to translate the proposition that life operates in 'patterns of aliveness' into the human realm of leading transformative change. Doing so could contribute to the paradigm shift Meadows (1999) suggests could be a high-level

leverage point for sustainability transformation, and Rockström et al. (2009) demand for a responsible Anthropocene. **The crucial benefit of the emerging ‘patterns of aliveness’ theory is that it opens new possibilities for conceptualizing leading transformative change collectively not as creating restrictions and constraints, but as invigorating the human potential. Adopting the notion that aliveness is an inherent characteristic and goal of all life as a conceptual premise introduces the notion that *actors in transformative change can become partners of life and evolutionary processes. Contributing to an alive planet with a thriving humanity, then, would less be a skill to be acquired than a competency to be unearthed and lived.***

The emerging ‘patterns of aliveness’ theory reinterprets concepts like stability and instability for individual leaders, collaboration systems, and societies. Stability may not always be desirable; instability not always dangerous. As mentioned before, ‘patterns of aliveness’ can never be perfect nor stable. They are always dynamic in the sense that they require actors to constantly observe, protect, maintain, create, re-create, shift or rehabilitate them. Challenges and crises, or imbalances and dysfunctionality, can be understood as indications that a certain pattern of socio-ecological interaction no longer serves the individual and the whole in mutual consistency and needs to be re-adjusted.

In view of the 17 SDGs and their entrenched challenges, leading transformative change at scale should be understood as the collective capacity to shift dysfunctional socio-ecological interaction patterns and improve the quality of collective sense-making and collective co-creation. This would potentially enhance the capacity of multiple collectives at all levels of the global society to steward transformation.

The two case examples in this chapter suggest that wicked problems and intractable challenges can only be addressed by multiple actors shaping the future together in a way that increases human competencies and enhances ‘aliveness patterns’ in systems. This dissertation suggests that enhancing ‘patterns of aliveness’ can provide a lens for understanding how leaders, as individuals and collectives of actors, intentionally participate in the unfolding of reality, and more so, how they can lead transformative change collectively.

While they do not provide detailed knowledge of how to reach the global goals, the SDGs provide the basis for strong identification with a desirable future. The emerging ‘patterns of aliveness’ theory and the six organizing principles provide an interesting interpretation of the SDGs. As agreed upon goals, they function as an attractor and mental driver for transformation and resonate with the ***principle of intentional generativity***. They have the potential to invigorate a sense of future orientation, contribute to empowerment, and offer guidance for monitored action. The multiple emerging initiatives around the SDGs, which partly cooperate and partly compete, should be seen through the lens of the ***principle of mutually enhancing wholeness***. If actors realize how much they are part of a larger transformation system, they of contributing to the goals. Understanding the contextual embeddedness of SDG implementation activities becomes as important as creating mutual support between initiatives. Many authors (OECD, 2015) highlight the mutual dependency of the goals. Attending to the ***principle of contextual interconnectedness*** would suggest seeing those initiatives as part of a diverse change system that requires structured dialogic

exchange as well as iterative learning mechanisms. Yet, it is equally important to not lose sight of the need for collaborating actors, nations, and change initiatives to develop strongly bounded, yet permeable identities. The ***principle of permeable containment*** suggests fostering transformation subsystems that create ‘aliveness patterns’ around certain issues, in certain geographical areas or for certain stakeholders, while simultaneously honoring the connectivity with the larger picture that the ***principle of mutually enhancing wholeness*** suggests. High-quality, structured, step-by-step engagement processes are needed to engage actors in the necessary collective action. There is an increasing tendency to promote innovation around implementing the SDGs and tackling global challenges. This invigorates the ***principle of emerging novelty***. Despite detailed indicators for SDG implementation, the transformation envisaged is a road into unknown territory that requires creativity, agility and a commitment to continuous innovation. Probably most difficult to understand and therefore most absent in this process is the ***principle of proprioceptive consciousness***. It is often pushed aside into the personal realm. Mindfulness, individually and collectively towards oneself, others and the multiple realities of life, is important for large system change. It helps balance the individual and the whole and furthers empathy and compassion. It contributes to the paradigm shift towards seeing reality as an interconnected whole.

An increasing number of scholars, philosophers and activists promote such a mind-shift. They have proposed models for a new economy in service of life (Capra and Luisi, 2014; Fullerton, 2015; Goepel, 2016; Kuenkel, 2016; Lovins, 1977; Weber, 2016), greater attention to the commons (Bollier and Watts, 2002; Weber, 2016), more focus on indigenous wisdom (Calton, Payne and Waddock, 2008), new advancements in contemplative communication technologies (Vaishnavi and Kuechler, 2015; Yates and Orlikowski, 1992), and the reawakening of mindfulness-techniques as stepping stone towards sustainability transformation (Bollier and Helfrich, 2015; Doran, 2017; Eaton, Hughes, and MacGregor, 2016; Kuenkel, 2008).

Alexander’s ‘quality without a name’ (1979; 2002a) termed here a ‘pattern of aliveness’ can only occur as a result of an arrangement of alive ‘centers’ (mental or physical) that support each other. In Alexander’s understanding, aliveness is a result and the same time a cause. The more aliveness, the more a pattern will contain centers that support each other. Hence, the six organizing principles laid out in Chapter 5 are not simply factors, features or conditions. Rather, they operate in a reciprocal and recursive relational occurrence, and are at the same time fractals that can engender increasing aliveness. Transforming dysfunctional patterns into aliveness patterns, then, means re-arranging and re-organizing existing structures into centers that support each other. In terms of leading transformative change towards SDG implementation, re-arranging dysfunctional patterns of interaction will require actors from a variety of institutions and sectors to work collaboratively together in a new way. Enabling actors to do this at scale is probably the most powerful pathway to large systems and transformative change, but only if it includes a connection to and a responsibility for the planet as a whole, as well as for an interconnected humankind. This can be seen as an expression of the ***principle of mutually enhancing wholeness and the principle of contextual interconnectedness***. The necessary shift in thinking can be seen as an enactment of the ***principle of proprioceptive consciousness***. In other words, the

humanness in global and local actors needs to surface, and they need to connect with each other and with the potential of aliveness that is in the center of the patterned organizing principles, and the result of their joint enactment.

This dissertation argues that it is necessary and possible to increase the ability of actors across all levels of the global society to diagnose and enhance ‘patterns of aliveness’, in acknowledgment and awareness of the planet as a whole. **The capability to see and foster ‘patterns of aliveness’ through collaborative and dialogic approaches is central to developing new human skills for leading transformative change collectively, in the civil society, the private sector, or the public sector. The complexity that emerges with this proposition cannot be avoided; however, this research suggests that the necessary shift in the way humankind co-creates future realities can be built on already existing human competencies.**

Chapter 3 argued that the notion of leadership of transformative change for sustainability needs to move beyond a focus on the individual actor and take into account the capacity of a collective of diverse actors to bring about transformation towards sustainability across and beyond institutional boundaries. The insights derived from the emerging ‘patterns of aliveness’ theory suggest that **leading transformative change should be seen as a process of collectively stewarding co-evolutionary ‘patterns of aliveness.’** How, then, can these insights be translated into approaches, methodologies, and tools that build and enhance human competencies to lead transformative change collectively? The following section explores how the practice model introduced in Chapter 1, the Collective Leadership Compass, is anchored in and related to the conceptual framework developed in Chapter 5. It is suggested that it can be seen as one example of a methodology that could help actors steward ‘patterns of aliveness’.

6.1 The Aliveness Enhancing Principles and the Practice Model

Taking into account the aliveness enhancing organizing principles elaborated above helps unleash dynamics of supported self-organization around increasing ‘patterns of aliveness’. The Collective Leadership Compass is a methodology that translates the organizing principles into meta-level guidance for change agents. As discussed in Chapter 2, **the purpose of the *Collective Leadership Compass* is not theoretical, but practical: to guide leaders’ thoughts and actions in planning, diagnosing, and evaluating change initiatives that foster patterns of successful human interaction.** It is built on the premise that leading transformative change in multi-actor settings needs to grow human capacities to navigate complexity, and invigorate existing competencies to co-create, maintain, steward, or rehabilitate ‘patterns of aliveness’. This is a crucial element, as it suggests moving from a current focus on human deficits to a perspective that acknowledges and enhances human competencies.

While the Merriam Webster dictionary defines competency simply as skill or ability, other

definitions suggest a more nuanced meaning. In this view, competencies are “a cluster of related abilities, commitments, knowledge, and skills that enable a person (or an organization) to act effectively.”²⁵ In the context of this dissertation the expression ‘human competencies’ refers to **actionable abilities** that can be learned or invigorated to advance individual or collective transformative change. **The aliveness enhancing organizing principles presented here are accessible to people and related to existing or future human competencies.** The emerging ‘patterns of aliveness’ theory and the six organizing principles advanced earlier propose that leading transformative change is not one competency, but a set of competencies in interaction. If enacted together, they invigorate each other and spread to enhance aliveness in human systems. This could be described as a ‘pattern of human competencies in interaction’ (Kuenkel, 2016). Competencies are not static, and not simply to be mastered, rather, they can be mutually reinforced in a relational dynamic.

This dissertation argues that invigorating **patterned competencies** can enhance aliveness in human systems and foster the capacity of collectives of actors to steward transformative change. In the Anthropocene, human beings are the most influential actors in determining the future of the planet Earth. Transformation towards sustainability hinges on people acting differently at scale. **Transformative change methodologies need to enhance the capacity of actors to cognize patterns and shift them towards ‘patterns of aliveness’.**

The Collective Leadership Compass functions as a meta-level guidance for a new structure of attention at the individual level, the level of collaborating partners, and the larger collaborative systems used by most multi-stakeholder initiatives that aim at transformative change. It aims at structuring collective patterns of thought and action by translating the six human competency dimensions - **future possibilities, engagement, innovation, humanity, collective intelligence, and wholeness** - into the more rational world of planning and implementation. These human competency dimensions can indeed be anchored in the previous chapter’s six organizing principles that enhance ‘patterns of aliveness’. Paying attention to the six dimensions through the practice model helps to enliven the underlying principles. Working with the practice model is *one* (but not the only) methodology that supports actors in collectively enhancing ‘patterns of aliveness’. It creates a conscious connection between invigorating aliveness in leadership as an individual task and invigorating the capacity for collective resilience and vitality. Hence, the practice model can serve as a tool to guide the management of high-quality cooperation.

The assumption is the following: If the human competencies behind the six dimensions start interacting, they will become ‘centers of attention’ that function like Alexander’s (2002a) centers in space. Their invigoration will create a relational space that enhances a sense of aliveness in individual actors, as well as opens up possibilities for constructive collaboration. Moreover, attention to the six principles helps actors shift human interaction into patterns that enhance aliveness, individually, collectively and gradually in socio-ecological systems. Subsequently, human interaction will more closely resemble a fractal of ‘patterns of

²⁵ Source (accessed on 4th July 2017): <http://www.businessdictionary.com/definition/competence.html>

aliveness' that work for all levels of systems (Kuenkel, 2015). The role of leaders is to co-steward this process more consciously while invigorating those human competencies that further dynamics of increasing aliveness. Table 7 suggests how the Compass' human competency dimensions can be conceptually anchored in the emerging 'patterns of aliveness' theory with its six organizing principles. Each human competency dimensions can be related to one of the aliveness enhancing underlying principles. Fig. 4 shows the graphical representation.

Table 7: The practice model and the aliveness enhancing organizing principles
(Copyright by the author)

The six organizing principles that enhance aliveness		The Collective Leadership Compass: human competency dimensions and their aspects for navigating complex change	
Principles	Dimensions	Aspects	
<p>1. Intentional Generativity <i>Life is intentional.</i> Invigorating the human capability to collectively shape future enhances 'patterns of aliveness'.</p>	<p>1. Future Possibilities Taking responsibility and jointly shaping reality toward a sustainable future.</p>	<p>1.1. Future Orientation Focusing on potential and opportunity; envisioning future and driving change for the envisaged future; enhancing solution-finding; opening to emergent change.</p>	
		<p>1.2. Empowerment Inspiring the connection to a greater cause; enabling or awakening passion for an envisaged future; building on or fostering intention forming; unleashing capacities and potentials for self-organized change; nurturing self-responsibility.</p>	
		<p>1.3. Decisiveness Ensuring execution of agreed action; committing to enactment of change; focusing on tangible outcomes; following-through on implementation; measuring progress.</p>	
<p>2. Permeable Containment: <i>Life thrives on identity and permeable boundaries.</i> Engaging the human desire for belonging, identity and meaning-making exchange as well as structured collaboration enhances 'patterns of aliveness'.</p>	<p>2. Engagement Building step-by-step engagement processes toward effective collaboration systems.</p>	<p>2.1. Process Quality Building resonance for change through step-by-step and structured engagement of stakeholders while acknowledging existing achievements, procedures and structures.</p>	
		<p>2.2. Connectivity Building relationships to all relevant stakeholders; fostering identification with the collaboration system for transformative change; ensuring cohesion of activities, building a community for change; leveraging network connections.</p>	
		<p>2.3. Collective Action Fostering agreements and consensus-building; cultivating ownership by honoring tangible contributions to change; focusing on jointly achievable outcomes and shared value creation; enhancing collective responsibility for impact; driving joint implementation and delivery of results.</p>	
<p>3. Emerging Novelty: <i>Life is generously creative.</i></p>	<p>3. Innovation Creating novelty and finding</p>	<p>3.1 Creativity Nourishing sources of creative energy and fostering collective generation of ideas; cultivating inventiveness; encourage creative solution-finding and a learning from mistakes culture.</p>	

The six organizing principles that enhance aliveness	The Collective Leadership Compass: human competency dimensions and their aspects for navigating complex change	
Principles	Dimensions	Aspects
<p>Building on the human desire to venture into the unknown and create new pathways enhances aliveness.</p>	<p>intelligent solutions.</p>	<p>3.2 Excellence Pursuing mastery and high-quality delivery; continuously growing knowledge and integrating new expertise; fostering continuous improvement.</p> <p>3.3 Agility Moving through crises and turning them into opportunities; staying open to change and cultivating risk taking; spotting and fostering emergent opportunities; nurturing self-responsibility; fostering adaptability to new situations.</p>
<p>4. Contextual Interconnectedness: <i>Life requires diversity in constant adaptive communication.</i> Leveraging the human capability to thrive on diversity and act in networks of networks in dialogue enhances aliveness.</p>	<p>4. Collective intelligence Using network building and dialogue to harvest difference for progress and leverage multiplicity for transformation.</p>	<p>4.1. Dialogic quality Attending to the structure and quality of conversations; awareness of fruitful communication patterns; listening before reacting and suspending judgment; creating structures for constructive stakeholder dialogues; enhancing meaningful conversations; balancing advocacy and inquiry.</p> <p>4.2. Diversity Fostering diversity in thought, viewpoints, background, and experiences; driving multiplicity of change approaches; respecting differences and encouraging varied perspectives; operating in a complementary and collaborative approach; integrating different perspectives and managing conflicts constructively; seeing opposition as corrective intention.</p> <p>4.3. Iterative learning Developing cycles of reflection into action; creating collective learning spaces; establishing feedback mechanisms; ensuring collective input into stock-taking, situational diagnose and progress evaluation.</p>
<p>5. Mutually Enhancing Wholeness: <i>Life operates with integrated collaborative entities.</i> Tapping into the human capability to sense wholeness, as well as engage with a bigger picture, the larger story, and the greater</p>	<p>5. Wholeness Staying connected to and acting in accordance with the common good and a larger change system.</p>	<p>5.1. Contextuality Taking a systemic view, relating to and exploring the larger context and planning action accordingly; actively exploring trends and developments; gaining perspective, seeing a broader picture; designing multi-level interventions; being responsive to the needs of the larger whole – the organization, cooperation system, society, the world.</p> <p>5.2. Mutual Support Build on and enhance one another's strengths; supporting each other in driving change; taking a complementary approach to allocating responsibilities; ensuring appreciative approaches to managing change.</p>

The six organizing principles that enhance aliveness		The Collective Leadership Compass: human competency dimensions and their aspects for navigating complex change	
Principles	Dimensions	Aspects	
system enhances individual and systems aliveness.		5.3. Contribution Clarifying and refining individual and system contribution to sustainability; setting-up and evaluating collective impact strategies; utilizing assets and resources in the best possible way; focusing on the connection to the common good.	
6. Proprioceptive Consciousness <i>Life emerges from meaning-making cognition.</i> Raising the human capability for reflection in action and the respect for the integrity of all life enhances aliveness.	6. Humanity Reaching into one another's humanness and balancing different requirements.	6.1 Mindfulness Deepening awareness of reality; fostering self and collective reflection; cultivating the connection to the planet and all manifestations of life; reflecting while acting; evaluating experience; looking beyond surface reality; attending to human encounter and meaningful engagement; mastering the mind.	
		6.2 Balance Integrating personal and professional aspirations; attending to needs for renewal; balancing different requirements, needs and interests; finding personal and operational rhythms of effectiveness; balancing attention to relationships and to issues; balancing; balancing commitment, reflection and renewal.	
		6.3 Empathy Embracing the perspective of others and opening gateways for reconciliation; attending to the quality of listening in conversations; exploring coherence in difficult to understand situations; inquiring into misunderstandings; enhancing meaningful conversations.	

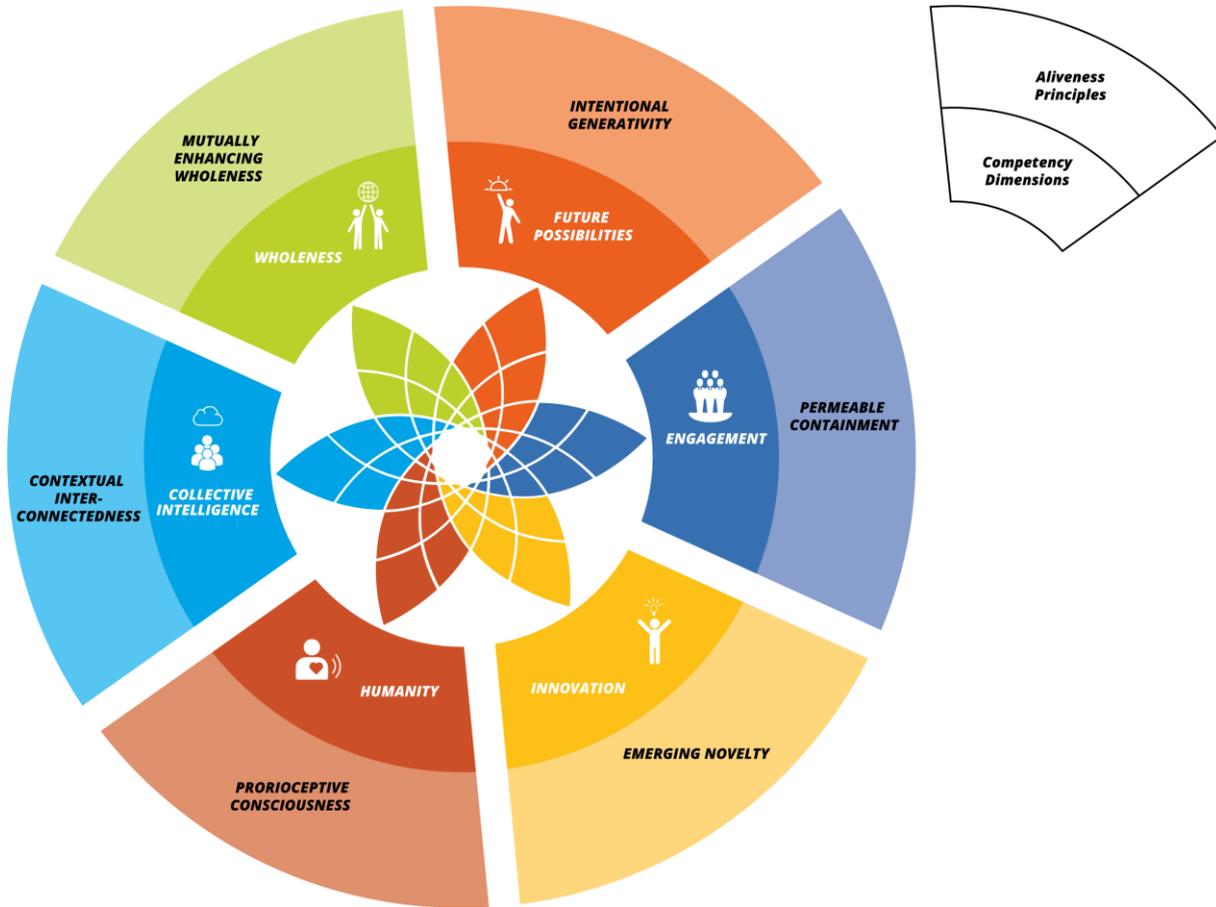


Figure 4: The relationship between compass dimensions and principles²⁶

The compass has been applied international and local multi-stakeholder settings (Kuenkel, 2016; 2015) for context diagnosis, continuous process planning, team reviews, and event planning. It has been tested multi-actor settings such as the development of voluntary social and environmental standards for responsible supply chains, public-private partnerships in infrastructure in Southern Africa; water resource management in Tunisia; sustainable forestry in Laos; land policy in Cambodia and economic development in Rwanda, among many others.²⁷ From the perspective of the emerging ‘patterns of aliveness’ theory, the compass enables actors to see both a pattern and the potential for shift in the pattern. Because the methodology acknowledges reality *as it is* (the current pattern observed), it opens the possibility of shifting unhelpful patterns, rather than attempting to effect change only in a linear way. Once people are able to recognize a present pattern through the lens of the six dimensions, they are also able to sense what is needed to allow a more collaborative pattern to emerge.

One way to describe how the compass creates more effective collaboration is to compare it

²⁶ Source: Collective Leadership Institute; copyright 2017 by Petra Kuenkel

²⁷ These examples are described in more detail in Kuenkel (2016)

with a balanced scorecard (Kaplan and Norton, 1996). A balanced scorecard leads to results if all its elements get sufficient, balanced attention. It can be used as diagnostic tool, planning tool, and evaluation tool. The same applies to the compass. The decisive difference, however, is that the compass focuses on invigorating human competencies and addresses the quality of collaboration as an important contributor to navigating complex change among multiple actors. It does not measure the performance of a company, institution, or multi-stakeholder initiative. Instead it enhances human competencies for constructive collaboration. Table 8 shows how the practice model is applied.

The practice showed that paying attention to all dimensions over time in a collaborative change process enhances the capability of the multi-stakeholder collaboration system to achieve results. Ignoring dimensions increased conflict; it endangered the cohesion among actors, or sabotaged results. The compass must be complemented by process methodologies that ensure attention to all dimensions. The section on multi-stakeholder collaboration further elaborates these methodologies. The compass guides attention without prescribing certain actions. Its application contributes to strengthening individual leadership and the capacity of a collective of actors to arrive at more effective collaboration and achieve tangible results. Practice has also shown that deliberate actions geared at balancing the six dimensions create an interactive pattern of human competencies that in turn enhances the effectiveness of collaboration. One could say that the combined actions become a fractal of the resilience of the collaboration system.

Table 8: The application process of the practice model

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Using the Collective Leadership Compass as a navigating tool in complex change

In order to achieve joint results in a multi-actor complex change environment, it is important to create cohesiveness. Trust, mutual respect, and an acknowledgment of difference reduce the transaction costs of a collaboration system. Rather than preventing conflicts, the compass helps actors move through conflicts productively, while staying in a collaborative field. Its application follows this general sequence:

- Observing the current state with the compass as a lens.
- Defining the momentary goal or challenge (the more specific the better) in relation to the overall goal of the initiative.
- Identifying the entry point dimensions – the current starting points to enact the compass and defining correspondent focus actions.
- Identifying supporting actions in all or at least most dimensions.
- Evaluating results and starting anew.

Conversations in process planning and evaluation, guided by the six dimensions, gain perspectives that strengthen the awareness of the co-creative processes and help to integrate both rational and non-rational issues.

The following section explores two case examples of multi-stakeholder collaboration initiatives through the lens of the aliveness enhancing organizing principles and the compass dimensions. Both exemplify how processes were stewarded to help systems of collaborating actors shift towards better collective co-creation. This exploration is preceded by a brief

introduction to the current discourse on the role of multi-stakeholder collaboration for the implementation of the Global Sustainable Development Goals. Multi-stakeholder collaboration initiatives for sustainability form temporary goal-oriented systems of human interaction. Because they are temporary and comparatively loosely structured, they can function as catalysts for the change envisaged in the collaborative behavior of representatives from participating institutions, organizations, and companies. Viewed through the lens of chaos theory, they become a fractal of the desired future and model Gandhi's famous quote: "We need to be the change we want to see in the world."

6.2 Multi-Stakeholder Collaboration as a Pathway to 'Patterns of Aliveness'

The last decade has seen an enormous advancement of multi-actor collaboration initiatives to address pressing societal or environmental issues, particularly in the field of sustainable development. The literature defines multi-stakeholder initiatives in many different ways using varied terminology. Such collaborations have been called multi-stakeholder partnerships, multi-stakeholder platforms, multi-stakeholder consultation, multi-stakeholder dialogues, and multi-stakeholder governance. The term multi-stakeholder collaboration is the common ground behind these different terms. It can be defined as the attempt to solve problems collaboratively, or jointly drive change for the common good, across the boundaries of societal sectors and institutions.

The purpose behind these multi-stakeholder initiatives includes voluntary standard developments for sustainable production and consumption, the provision of public goods, such as water, the improvement of natural resource management, or the delivery of social services. They can be long-term initiatives or short-term target-oriented partnerships, and take place within countries or in transnational arrangement. A discourse has developed to gauge the effectiveness of multi-actor collaboration initiatives (Beisheim, 2011; Brouwer and Woodhill, 2015) and their role as new forms of governance (Bäckstrand, 2006). Collaboration can be a substantial challenge to carry out. The process of partnering between different stakeholders is generally slow, with many different understandings of collaboration, high transaction costs and a tendency to duplicate existing solutions in a needless or inefficient effort. As a result, many existing multi-stakeholder collaborations are perceived as lacking efficiency or effectiveness (Biermann et al., 2007; Van Tulder and Pfisterer, 2013). These complex and often arduous collaborations among different societal actors are the subject of high expectations, and so a growing body of research has attempted to measure the extent to which they create societal value beyond what ordinary approaches would deliver (Beisheim, 2012; Pattberg and Widerberg, 2014). For example, the value creation framework (Austin, 2000; Austin and Seitani, 2012) attempts to provide an instrument to assess value creation by looking at the dynamics and outcomes of collaboration in the partnering process between different societal actors.

However, despite doubts regarding their effectiveness, multi-stakeholder collaborations are increasingly common. The goal of working collectively across institutions and societal sectors

towards a more sustainable world and dealing jointly with complex megatrends, particularly in the context of the global Agenda 2030, has gradually moved onto the agenda of every nation, many organizations, and more and more citizens. The private sector has also realized that sustainability concerns might require a change in their approach to business. Unsustainable global trends such as climate change, ecosystem decline, water scarcity, poverty, economic injustice, food insecurity, demographic change, and population growth will eventually affect company performance and prospects (KPMG, 2012). Multi-stakeholder collaboration has emerged as a response to the complex challenges ahead (Kuenkel and Schaefer, 2013; Lozano, 2007). It is an emerging field of practice that is characterized by:

- Multiple actors, often with conflicting interests, who are not used to working together, and need to align around an issue of common concern. They need to identify joint improvement approaches (e.g. expanding the production and marketing of sustainably produced coffee, improving water resource management, protecting natural resources, building a sustainable societal health system, etc.), and implement them collaboratively or at least coherently. In the terms of the emerging ‘patterns of aliveness’ theory **they need to jointly advance collaborative interaction patterns that lead to tangible improvements.**
- A collaboration where effectiveness depends on engaging multiple actors, with different levels of power and access to resources, who – at times – have limited degrees of trust towards each other. In the terms of the emerging ‘patterns of aliveness’ theory **they need to build a functional collaboration system that enhances trust as one indicator of aliveness.**
- Multi-dimensional problems, which require solutions that are *complicated* (e.g. ensuring good practices in the production of the commodity); *complex* (e.g. requiring a testing and learning approach, emerging solutions and innovation for scalability) and, *chaotic* (e.g. subject to unforeseen market or political influences) (see also Snowden and Boone, 2007). In the terms of the emerging ‘patterns of aliveness’ theory **multiple actors need to jointly steward transformative change in volatile environments while establishing a strong learning culture.**

Lozano (2007) argues that collaboration is a vital to overcome the “economic, environmental and social imbalances” that occur as a result of “individualistic behaviors with their quest for profit maximization and wealth accumulation” (Lozano, 2007, p. 370). Despite greater interest in collaborative approaches, especially in alignment with SDG 17’s suggestion of a partnering approach to implementation (Cortez et al., 2007), current approaches to planning and implementing sustainability transformations in government, civil society, and business rarely consider the complex multi-dimensionality of sustainability problems (Fadeeva, 2005).

Multi-actor collaboration settings across the boundaries of private sector, public sector, and civil society are complex, purposeful human change endeavors to re-arrange existing societal settings and overcome organizational limitations (Glasbergen, 2011; Kuenkel, 2015, 2016; Lozano, 2007). Translated into the ‘patterns of aliveness’ vocabulary, multi-stakeholder collaboration enables actors to see the larger change system by applying the principle of **mutually enhancing wholeness**, and opens the possibility of re-arranging or re-organizing

dysfunctional patterns of interaction between people, institutions, society, and nature. This can be seen as re-arranging the patterns of **contextual interconnectedness**, creating new forms of collaborative identities with **permeable containment**, and channeling **intentional generativity** for the common good. In other terms, the **purpose of multi-stakeholder collaboration and partnering efforts is to gradually shift issue-based and/or contextualized socio-ecological systems into increasing 'patterns of aliveness' in continuous negotiation between the interests of individuals and the interest of the whole**. Multi-stakeholder collaboration initiatives can therefore be understood as laboratories for **stewarding transformative change collectively in multi-actor settings**. They demonstrate **one way of shifting societal systems and subsystems into improved functionality**.

In practice, multiple actors often have conflicting interests, and often see their own interests as much more important than those of others. They may perceive that their subsystem's aliveness is endangered by engaging in change initiatives, or they may overtly or covertly defend institutional and power territories. In addition, multi-stakeholder collaboration depends on a high level of proactive commitment that cannot be directed as it would be in hierarchical settings. Stakeholder collaboration, by definition, can include mutual dependency (such as in responsible supply chain management), power differences (such as in cross-sector water resource management that involves governments and community organizations), or conflicting interests (such as between governments, citizens, and companies in renewable energy initiatives). Success rests on the actors' ability to build collaborative fields with eye-level cooperation that leverage differences into progress and achieve tangible results. This is usually not about compromising, but about finding solutions that work better for all. Hence, such multi-stakeholder settings need to become emerging change systems (Waddell, 2015) with awareness of **mutually enhancing wholeness**, **contextual interconnectedness**, and sufficient, yet **permeable containment**. The multiple actors need to negotiate their system's identity in the context of their particular cooperating institution and the joint purpose of the collaboration. This only works if a better, more alive future is on the horizon for all. A joint vision for change fosters **intentional generativity** and the **emergence of novelty**. Experience shows that multi-stakeholder collaboration can also be an avenue to new personal insights and the transformation of the participating actors (Poncelet, 2001), which connects to the principle of **proprioceptive consciousness**.

As more and more complex stakeholder collaboration initiatives, platforms, and multi-actor partnerships for SDG implementation emerge, a growing number of scholars have looked at success factors, framework conditions, and building blocks for impactful collaboration among multiple actors (Corbett and Mellouli, 2017; Kuenkel et al., 2011; Pattberg and Widerberg, 2014; Solaimani, Gulyaz, van der Veen and Venugopal, 2015; Tamoschus, Hienerth and Lessl, 2015). Success factors are areas of attention leading to recommended practices, which increase the likelihood that a collaboration initiative will achieve results and have an impact. The following section examines how such factors are related to the practice model with its human competency dimensions, and subsequently to the underlying principles enhancing aliveness in living systems.

6.2.1 Success Factors in Multi-Stakeholder Collaboration

The identification of factors in the success of multi-stakeholder collaborations is most often derived from a retrospective analysis, and built on the assumption that assembling the right factors or building blocks will make collaboration successful. Factors are a necessary, but by no means sufficient, condition for successful collaboration. In order to inform the practice of multi-stakeholder collaboration, success factors need to reflect a 'pattern of aliveness' in the sense that they acknowledge the complex and dynamic balance between emergent process and sufficiently contained structure. Whether such success factors or building blocks are relevant or applicable depends on the context and the phase of the multi-stakeholder collaboration effort. The context, the form, scope, level, purpose, complexity and the content of the multi-stakeholder initiative determines how they should be operationalized. A list of success factors can point actors toward certain practices, but they should be consciously connected to the underlying human competencies to grow the capacity of a collective of actors to shift from dysfunctional to more functional interaction patterns.

The emerging 'patterns of aliveness' theory views multi-actor collaboration settings across the boundaries of the private sector, the public sector, and civil society as complex, yet purposeful human change endeavors. They hold the potential to shift or rearrange existing societal settings and organizational boundaries (Lozano, 2007) into better functional interaction patterns that increase aliveness of systems and subsystems. Their success rests on the ability of people to build collaborative fields of action and negotiate their system's identity between those of their particular cooperating institutions and their joint purpose. The discourse on success factors is considered an important contribution to the role of multi-stakeholder collaboration in the context of sustainability (Brouwer and Woodhill, 2015; Pattberg and Widerberg, 2014; Beisheim, 2011; Kuenkel et al., 2011). However, if they are not anchored in a deeper understanding of the multiple levels of system dynamics in complex socio-ecological systems, success factors may become decontextualized prescriptions that will not necessarily lead to successful results.

Multi-stakeholder collaboration initiatives are complex systems that emerge when existing social or international divisions of labor are perceived as failing to deliver the expected change (Fadeeva, 2005). They offer an interesting field of study that goes beyond the actual evaluation of success and failure of a particular collaboration endeavor to examine practices of leading transformative change collectively in nested multi-actor settings of societal and global change (Glasbergen, 2011; Kuenkel, 2015, 2016). The conceptual discourse around how social change processes achieve collective impact shows how a more systemic perspective is helpful in analyzing cross-sector societal partnering processes (Hanleybrown et al., 2012). Here, recommendations for successful collaboration rest on "conditions" (similar to factors) for success such as a common agenda, shared measurement systems, continuous communication, mutually reinforcing activities, and backbone organizations (Kania and Kramer, 2011). These conditions are expected to create more intangible effects like trust and a sense of ownership among all partners, which are understood to be at the core of successful complex collaboration processes.

The following sections show how success factors and recommended practices for multi-

stakeholder collaboration can be captured in a way that they correspond with the human competency dimensions of the practice model. Derived from extensive practitioner exchange as well as literature review²⁸, the six success factors are summarized as *joint strategy, cooperative delivery, adaptive innovation, dialogic communication, contextual impact and collective value*.

Success Factor 1: Joint Strategy

Multi-stakeholder initiatives need to tap into people's desire and competency to collectively shape the future despite different interests and world-views. This observation refers to the human competency dimension of **future possibilities** and is related to the principle of **intentional generativity**. While multi-stakeholder initiatives are most often started by a small group of visionary actors (Beisheim, 2011), they gradually, often in a step-by step process, engage more and more stakeholders (Kuenkel et al., 2011) as they develop the goal. Because there is most often no disciplinary hierarchy between partners from different institutions, all actors in the initial core group need to lead. Development of vision and strategies is a multi-layered process that begins with a core group, but eventually needs to include all relevant stakeholders (Kuenkel et al., 2011). The core group's task is to create momentum, test the resonance for an overall coherent goal, and build a strategy process that relies on considerable and extensive consultation to generate agreed-upon action planning (Pattberg and Widerberg, 2014). People engage when they see the bigger picture, a win-win situation (Beisheim, 2011), a shared value (Tennyson, 2011), or an urgent reason to act, and when they understand how they can contribute to positive change. Ownership develops when the goal of partnering is relevant and clear (The Partnership Resource Centre, 2015) to all stakeholders, and when all partners perceive that their contribution is valued and they feel accountable for progress. High-level support is essential, and a single powerful partner can play a crucial role in launching the partnering efforts by supplying the initial costs of cooperation in the starting phase (Beisheim, 2011). Goal clarity, the management of stakeholder inclusion, and accountability for results all contribute to the successful development of a joint strategy.

Success Factor 2: Cooperative Delivery

Multi-stakeholder initiatives need to build cohesive collaboration systems around issues of common concern. They need to engage people for a larger goal or a meaningful change, but

²⁸ The list of success factors has been derived and further developed from practice experience, extensive practitioner exchange around the Global Partnership Initiative "Promoting Effective Partnering," as project of the Global Partnership for Effective Development Cooperation (GPEDC), literature review on success factors mentioned in recent publications, and the following related publications by the author: **Kuenkel, P.; Buddenberg, J.; Kuehn, E; Heckmann, S. (2016).** *Towards a Reference Framework for Effective Partnering - Creating Collaboration Patterns that Work for Successful SDG Implementation*. Publication for the GPECD Global Partnership Initiative: Promoting Effective Partnering, Collective Leadership Institute; **Kuenkel, P., Aitken, A. (2015):** *Key Factors for the Successful Implementation of Stakeholder Partnerships: The Case of the African Cashew Initiative*, in: Bitzer, V., Haman, R., Hall, M., Griffin-EL, E.W. (Eds.), *The Business of Social and Environmental Innovation - New Frontiers in Africa*. Springer; **Kuenkel, P., Gerlach, S. and Frieg, V. (2011)** *Stakeholder Dialogues: Key Concepts and Competencies for Achieving Common Goals - a practical guide for change agents from public sector, private sector and civil society*. Potsdam: Collective Leadership Institute Publishing, also available in French, Spanish, German and Arabic.

they also need to make the purpose and boundary of the collaboration system clear. This refers to the human competency dimension of **engagement** and relates to the principle of **permeable containment**. An often-undervalued accomplishment of such initiatives is creating a sense of belonging to the collaborative effort. Stakeholders need to feel that they are part of something larger. Relationships require attention throughout partnering, especially if a high level of creativity must be maintained (Tennyson, 2011). Protocol, boundaries, and territories must be respected, and approaches to deal with conflict should be agreed upon (Beisheim, 2011; Brouwer and Woodhill, 2015). Actors, especially in the core group that drives the change process, need to acquire skills in designing and managing process (Pattberg and Widerberg, 2014; Kuenkel et al., 2011). Partnering may look unpredictable, so stakeholders want to know what to expect and when. Having reliable processes contributes to building trust. Context challenges, such as corruption or volatile environments, need to be identified and accounted for. Keeping the goal high on the agenda helps stakeholders to connect emotionally and keep the courage needed for a continuous commitment (Tennyson, 2011). Clarity on process planning, strategic alignment of all partners (The Partnership Resource Centre, 2015), and professional process management provide the basic level of certainty that people require to stay engaged (Kuenkel, 2015). An independent secretariat with a professional staff can help to manage expectations and process. Authentic participation, in the way contributions are handled, workshops are run, and communication takes place, ensures ownership. When planning and implementing collaboration processes, it is important to make results achieved visible to all stakeholders. Such results can be as simple as a basic agreement to meet again or a set of documented recommendations, or as complex as agreed-upon action plans and progress reporting on implementation. Managing stakeholder engagement, building networks, and ensuring cooperative delivery all contribute to successful cooperation and implementation.

Success Factor 3: Adaptive Innovation

Multi-stakeholder collaboration needs to tap into the human desire and competency to create new pathways and find innovative solutions to issues of common concern. This refers to the human competency dimension of **innovation** and relates to the principle of **emerging novelty**. Most complex collaboration efforts take place around content issues, and bring together experts from different stakeholder groups. Knowledge, expertise, complementary resources (Beisheim, 2011), and information need to be provided in a way that helps stakeholders and partners to see the full issue of concern and its political and social context (Pattberg and Widerberg, 2014). Capacity building helps to strengthen the voices of weaker stakeholder groups or partners and improves the quality of their contribution. Joint and participatory learning (Brouwer and Woodhill, 2015) mechanisms ensure accountability of all partners and allow evaluation of results to be rapidly integrated into the next process steps (Kania and Kramer, 2011). At the outset, most stakeholder collaboration efforts are concerned with problem solving rather than with innovation. But with good process designs and the integration of different expertise, they often shift towards innovative approaches. Professional process management also requires a clear funding approach. Innovative approaches, diversity in funding sources, and results-based funding (Beisheim, 2011) can support innovation. Attending to creative ways of co-designing innovative approaches,

knowledge management, and planning flexibility also contribute to successful innovation and adaptability.

Success Factor 4: Dialogic Communication

Multi-stakeholder initiatives build new human interaction systems across the boundaries of societal sectors and institutions. They connect people who do not know each other and would not normally work together. This refers to the human competency dimension of **collective intelligence** and relates to the principle of **contextual interconnectedness**. Progress is not built on convincing others to follow a predefined goal, strategy or action plan, but rather the willingness to negotiate pathways into the future (Kuenkel et al., 2011). This is often an arduous process, but becomes a fertile ground for **collective intelligence**. Integrating concerned or affected but weaker stakeholder groups ensures that outcomes are based on a broader picture. This process also demands setting a minimum standard for the inclusion of partners in the process (Brouwer and Woodhill, 2015; Pattberg and Widerberg, 2014). Power differences cannot be avoided. However, if stakeholder collaboration is inclusive, power balances often shift (Kuenkel et al., 2011). High-quality communication and well-structured dialogue clearly make a multi-stakeholder initiative more credible. This can be seen in how well stakeholders listen, and in the transparency in communication among participating actors as well as between actors and the wider public. Trust develops in accordance with the reliability with which recommendations, inputs or learnings from different stakeholders are taken into account (Brouwer and Woodhill, 2015; Pattberg and Widerberg, 2014). Ensuring structured dialogue, establishing collaborative forms of governance, and developing agreed-upon learning mechanisms all contribute to successful communication and dialogue.

Success Factor 5: Contextual Impact

Multi-stakeholder initiatives must be focused on tangible outcomes, but also contribute to a wider impact (Brouwer and Woodhill, 2015; Kuenkel et al., 2011; Pattberg and Widerberg, 2014; Tennyson, 2011). This refers to the human competency dimension of sensing **wholeness**, and relates to the principle of **mutually enhancing wholeness**. Collaborative initiatives require a clear result focus for stakeholders to stay engaged, but must also pay attention to the wider context to which they contribute. Particularly with the advent of more and more multi-stakeholder initiatives that aim to implement the SDGs, there is a danger that collaboration systems around one particular issue of common concern might narrow their focus too much and lose sight of the larger context. Funding mechanisms that demand linear planning of results can aggravate this danger (Byiers, Guadagno and Karaki, 2015). Planning is important in multi stakeholder collaboration, but if plans are too rigid, the course of implementation can fail to achieve an impact because plans cannot respond to emergent opportunities. Success is more likely when various activities are understood in relation to each other and the collaboration's contribution to a larger system of transformation is clear. Attention to **mutually enhancing wholeness** in its multi-layered occurrence is important throughout the collaboration initiative, from the initial phase of engaging stakeholders to the scaling of the results. Appropriate context management, capacity development, and a regularly reviewed focus on impact contribute to successful contextual impact.

Success Factor 6: Collective Value

Most partnering efforts around SDG implementation emerge at least partly from an ethical imperative, such as fairer distribution of resources, access to resources, overcoming economic imbalances, or safeguarding the natural environment. This refers to the competency dimension of **humanity** and relates to the principle of **proprioceptive consciousness**. Multi-stakeholder initiatives are built on a growing sense of responsibility for the future, and the creation of shared or collective value (Kania and Kramer 2011; Donaldson and Walsh, 2015). They often get their credibility from a common purpose and a concern that transcends vested interests. Conflicting interests, however, are inherent to multi-stakeholder collaboration. To keep people engaged, process designs must enable actors to converse about their interests and power differences. Authentically dealing with differences helps actors access their humanity. It contributes to a greater awareness of the interconnections among disparities and the interdependencies among actions. An appreciative approach in collaboration, a balance of power and influence, and a continuous effort towards mutual understanding contribute to achieving collective value.

Table 9 suggests how the underlying life-enhancing principles and the human competency dimensions are related to the success factors and recommended practices in multi-stakeholder collaboration. It connects the linear and action-oriented success factors known from multi-stakeholder initiatives and the practice recommendations derived from these factors to the 'patterns of aliveness' approach. Attention to the success factors thus becomes a guide for enhancing aliveness in a system of multi-stakeholder collaboration.

Table 9: Principles, dimensions and success factors in multi-stakeholder collaboration
(Copyright by the author)

Principles	Dimensions	Success factors	Recommended practices in multi-stakeholder collaboration	Aspects for navigating complex change
1. Intentional Generativity Invigorating the human capability to collectively shape future.	1. Future Possibilities Taking responsibility and consciously shaping reality toward a sustainable future.	1. Joint Strategy Ensuring that over time all relevant stakeholders drive strategy and implementation.	1.1. Goal clarity Process management of emerging goal clarity; joint diagnose of current situation; co-development of vision; co-development of theory of change; jointly developed agreement on impact chain and milestones; high-level sponsorship.	1.1. Future Orientation Focusing on potential and opportunity; envisioning future and driving change for the envisaged future; enhancing solution-finding; opening to emergent change.
			1.2. Inclusivity Measures to strengthen weaker partners; inclusive decision-making; inclusive and representative steering or governance structures; appropriate management structures.	1.2. Empowerment Inspiring the connection to a greater cause; enabling or awakening passion for an envisaged future; building on or fostering intention forming; unleashing capacities and potentials for self-organized change; nurturing self-responsibility.
			1.3. Accountability Definition of clear roles and responsibilities; established accountability procedures; joint agreement on milestones; jointly agreed result monitoring and reporting structures; joint action reviews; transparent financial flows and adequate structures; adequate legal structures.	1.3. Decisiveness Ensuring execution of agreed action; committing to enactment of change; focusing on tangible outcomes; following-through on implementation; measuring progress.
2. Permeable Containment Engaging the human desire for belonging, identity and meaning-making exchange as well as structured collaboration.	2. Engagement Building step-by-step engagement processes toward effective collaboration systems.	2. Cooperative Delivery Ensuring that the interaction between stakeholders is well organized and enhances identification with the joint endeavor.	2.1. Engagement management Step-by-step engagement of core partners and relevant stakeholders; transparent decision-making; reliability of planning and implementation processes; utilization of backbone support; establishment of project secretariats.	2.1. Process Quality Building resonance for change through step-by-step and structured engagement of stakeholders while acknowledging existing achievements, procedures and structures.
			2.2. Network building Attention to building adequate cohesion among partners and participating stakeholders; high level political and institutional support; action networks between key stakeholders; establishment of network structure between partnering organizations; relationship management with management structures of collaborating institutions.	2.2. Connectivity Building relationships to all relevant stakeholders; fostering identification with the collaboration system for transformative change; ensuring cohesion of activities, building a community for change; leveraging network connections.
			2.3. Result orientation Establishment of well-functioning, mandated and	2.3. Collective Action Fostering agreements and consensus-building;

Principles	Dimensions	Success factors	Recommended practices in multi-stakeholder collaboration	Aspects for navigating complex change
			stable cross-partner core group or project secretariat; attention to joint implementation; orientation towards tangible results and early wins; sufficient resource allocation.	cultivating ownership by honoring tangible contributions to change; focusing on jointly achievable outcomes and shared value creation; enhancing collective responsibility for impact; driving joint implementation and delivery of results.
3. Emerging Novelty Building on the human desire to venture into the unknown and create new pathways.	3. Innovation Creating novelty and finding intelligent solutions.	3. Adaptive Innovation Ensuring co-design of transformation prototypes and attention to emergent opportunities.	3.1 Creative co-design Management of creative co-design processes; creative collective solution-finding; exposure to different world-views and experiences; joint creative learning mechanisms; flexibility and adaptability in planning; preparedness to challenge comfort zones.	3.1 Creativity Nourishing sources of creative energy and fostering collective generation of ideas; cultivating inventiveness; encourage creative solution-finding and a learning from mistakes culture.
			3.2 Knowledge management Benchmark experiences and expertise; integration of high quality technical and content expertise; continuous update of state-of the art content knowledge; willingness to build and expand collaboration capacity; exposure to new trends and solutions; establishment of innovation laboratories.	3.2 Excellence Pursuing mastery and high quality delivery; continuously growing knowledge and integrating new expertise; fostering continuous improvement.
			3.3 Planning flexibility Mechanisms to jointly adapt project strategy; establishment of complaint mechanisms; management of disagreements and unexpected developments; attention to emergent opportunities crises.	3.3 Agility Moving through crises and turning them into opportunities; staying open to change and cultivating risk taking; spotting and fostering emergent opportunities; nurturing self-responsibility; fostering adaptability to new situations.
4. Contextual Interconnectedness Leveraging the human capability to thrive on diversity and act in networks of networks in dialogue.	4. Collective intelligence Using network building and dialogue to harvest difference for progress and leverage multiplicity for transformation.	4. Dialogic Communication Ensuring communication architectures that acknowledge diversity and network formation.	4.1. Structured dialogue Management of consensus-building and joint purpose formation; establishment of high quality communication and dialogue structures; agreed and transparent rules of communication within and beyond the collaboration system; authentic stakeholder participation.	4.1. Dialogic quality Attending to the structure and quality of conversations; awareness of fruitful communication patterns; listening before reacting and suspending judgment; creating structures for constructive stakeholder dialogues; enhancing meaningful conversations; balancing advocacy and inquiry.
			4.2. Governance Establishment of an emergent and collaborative transformation systems of multiple actors; collaborative and representative governance structures; utilization of complementary knowledge and resources; communication architectures that ensure integration of different perspectives;	4.2. Diversity Fostering diversity in thought, viewpoints, background, and experiences; driving multiplicity of change approaches; respecting differences and encouraging varied perspectives; operating in a complementary and collaborative approach; integrating different perspectives and managing

Principles	Dimensions	Success factors	Recommended practices in multi-stakeholder collaboration	Aspects for navigating complex change
			acknowledgement of stakeholders' different resources and competencies; multi-level inclusion of stakeholders - local/national/international.	conflicts constructively; seeing opposition as corrective intention.
			4.3. Learning mechanisms Joint review of roles, purpose and procedures; regular joint strategic and process review; establishment of joint process, results and impact monitoring; internal and external impact evaluations.	4.3. Iterative learning Developing cycles of reflection into action; creating collective learning spaces; establishing feedback mechanisms; ensuring collective input into stock-taking, situational diagnose and progress evaluation.
5. Mutually Enhancing Wholeness: Tapping into the human capability to sense wholeness, as well as engage with a bigger picture, the larger story, and the greater system.	5. Wholeness Staying connected to and acting in accordance with the common good and a larger change system.	5. Contextual Impact Ensuring the relevance and embeddedness of the initiative.	5.1. Context management Regular updating of context knowledge; consideration of similar and relevant other initiatives; well-planned integration of global and local activities; well-managed communication between global and local partnering structures; meta-collaboration in transformation networks.	5.1. Contextuality Taking a systemic view, relating to and exploring the larger context and planning action accordingly; actively exploring trends and developments; gaining perspective, seeing a broader picture; designing multi-level interventions; being responsive to the needs of the larger whole – the organization, cooperation system, society, the world.
			5.2. Capacity development Content specific capacity development; enhancement of process competency and transformation literacy of all actors; support for anchoring collaborative approaches in the respective institutions; strengthening complementarity in implementation; utilization of strength and expertise of stakeholder institutions.	5.2. Mutual Support Build on and enhance one another's strengths; supporting each other in driving change; taking a complementary approach to allocating responsibilities; ensuring appreciative approaches to managing change.
			5.3. Impact focus Focus on mutual benefit; regular joint strategy review; establishment of impact measurements; clarity on contribution to larger change system; agreed scaling-up strategies, attention to long-term strategy.	5.3. Contribution Clarifying and refining individual and system contribution to sustainability; setting-up and evaluating collective impact strategies; utilizing assets and resources in the best possible way; focusing on the connection to the common good.
6. Proprioceptive Consciousness Raising the human capability for reflection in action and the respect for the integrity of all life.	6. Humanity Reaching into one another's humanness and balancing different requirements.	6. Collective Value Ensuring balanced influence and integration of weaker stakeholder	6.1 Appreciative approach Acknowledgement of individual goals and purposes; attention to the integrity and dignity of all partners; attention to and respect for organizational constraints; respect for the contribution of weaker partners.	6.1 Mindfulness Deepening awareness of reality; fostering self and collective reflection; cultivating the connection to the planet and all manifestations of life; reflecting while acting; evaluating experience; looking beyond surface reality; attending to human encounter and meaningful engagement; mastering the mind.

Principles	Dimensions	Success factors	Recommended practices in multi-stakeholder collaboration	Aspects for navigating complex change
		groups.	<p>6.2 Balance of power and influence Attention to power differences; strengthening of weaker partners; mechanisms to include the voices of weaker stakeholder groups; focus on win-win solutions; advocacy for weaker stakeholder groups.</p>	<p>6.2 Balance Integrating personal and professional aspirations; attending to needs for renewal; balancing different requirements, needs and interests; finding personal and operational rhythms of effectiveness; balancing attention to relationships and to issues; balancing; balancing commitment, reflection and renewal.</p>
			<p>6.3 Mutual understanding Sufficient understanding of the mission, preferred ways of working and organizational constraints of partners; establishment of agreed structures for listening to the genuine voice of different stakeholders; exposure to world-view, living condition and constraints of different stakeholder groups; reconciliation mechanisms.</p>	<p>6.3 Empathy Embracing the perspective of others and opening gateways for reconciliation; attending to the quality of listening in conversations; exploring coherence in difficult to understand situations; inquiring into misunderstandings; enhancing meaningful conversations.</p>

Fig. 5 shows an overview of the relationship between human competency dimensions and success factors. The six factors will be explained in more detail below.



Figure 5: Success factors, principles and competency dimensions²⁹

This dissertation suggests that the aliveness enhancing organizing principles and the human competency dimensions of the practice model are a meta-level tool that can guide attention in planning and implementing multi-stakeholder collaboration initiatives. This tool demonstrates the patterned relationship between success factors. However, the success of collaborative initiatives ultimately hinges on the ability of key actors to collectively navigate the success factors and the related competency dimensions in complex change processes that aim at building functional collaboration between multiple stakeholders. The next section

²⁹ Source: Collective Leadership Institute; copyright 2017 by Petra Kuenkel

will therefore describe essential components in the process management of stakeholder collaboration processes.

6.2.2 Development Phases in Multi-Stakeholder Collaboration

Process management in multi-stakeholder collaboration refers to the design of the overall preparation, implementation, and review process of the initiatives. It refers to all planned and emergent steps in the collaboration effort and includes the design of communications, workshops, and events (Hodgkinson, Whittington, Johnson and Schwarz, 2006; Succar, 2009). Good process management provides a guiding structure that brings a complex set of actors into a functional and relatively stable collaboration system and provides a mutually understood framework for collective action (Kuenkel et al., 2011; Pattberg and Widerberg, 2014; Tennyson, 2011). It helps to prevent chaos, but allows enough freedom for the different forms of communication that collaboration requires.

Process management can take very different forms, depending on the purpose, form, level, and complexity of collaboration. It can take the form of a sequence of informal and formal communication events that bring partners and stakeholders into a structured conversation and are designed to lead to a desired outcome. Stakeholders often have different opinions and worldviews and even, at times, controversial standpoints. When difficulties, conflicts, and differences of interest are anticipated among stakeholders, process management needs to provide structure and at the same time flexibility (Kuenkel et al., 2011; Kuenkel, 2015; McCann, 1983; Succar, 2009). Process management provides all actors, including initiators, conveners, and participating stakeholders, with the minimum degree of certainty that collaboration in a complex and uncertain environment requires. It helps actors develop a sense of cohesion, provides orientation, and safeguards against unhelpful interventions. Process management facilitates internal and external communication and designs events, meetings, and workshops. It aims at keeping the success factors in an appropriate balance. Most importantly, it works to steward implementation steps with an understanding of the requirements of the different phases of complex stakeholder collaboration.

A number of practitioners have developed models that depict these different phases (Tennyson, 2011; Kuenkel et al., 2011; Brouwer and Woodhill, 2015; Hanleybrown et al., 2012). Some of these models describe a more linear process (Kania and Kramer, 2011), while others depict a cyclical process (Tennyson, 2011; Brouwer and Woodhill 2015), or a spiral process modelling evolutionary change (Kuenkel et al., 2011). But they are similar in the sense that they roughly distinguish between typical phases in stakeholder collaboration. From research on evaluating success and failure in multi-stakeholder collaboration (Beisheim, 2011, 2012; Byiers et al., 2015; Jamali and Keshishian, 2007; Pattberg and Widerberg, 2014), it has become clear that such processes can be divided roughly into four phases. Each phase requires attention to some typical features. Table 10 shows an overview of and comparison between three process models. The next section captures typical features of the four phases and the requirements of each for effective process management.

Table 10: Process models for multi-stakeholder collaboration
(Created by the author)

Dialogic Change Model <i>(Kuenkel et al., 2011)</i>			Partnering Cycle <i>(Tennyson, 2011)</i>		Collective Impact <i>(Kania and Kramer, 2011)</i>	
Phase 1	Exploring and engaging	Understanding the context, understanding stakeholders' different viewpoints, engaging them into preparatory conversations, raising energy for action, building the case for change.	Scoping and Building	The goal and vision are identified and a clear scope is set, and the corresponding activities are planned.	Generate Ideas and Dialogue	Engage Community in conversation Identify value proposition, common ground, and shared values. Have core group of dedicated people to lead. Spend time on relationship and trust building by inviting usual and unusual suspects.
Phase 2	Building and formalizing	Clarifying goals and commitment, establishing resources, creating formal agreements, planning process and joint implementation.	Managing and Maintaining	This is the implementation phase, characterized by efforts on mobilization, structuring and delivering.	Initiate Action	Identify champions and form cross-sector group. Map the landscape and use data to make case. Facilitate community outreach. Analyze baseline data to ID key issues and gaps.
Phase 3	Implementing and evaluating	Implementing agreed-upon or recommended activities, creating showcases for change, evaluating progress and outcomes.	Reviewing and Revising	The activities are measured, reviewed and, if applicable, revised.	Organize for Impact	Create infrastructure (backbone and processes). Create common agenda (common goals and strategy). Engage community and build public will Establish shared metrics (indicators, measurement, and approach).
Phase 4	Developing further, replicating or institutionalizing	Bringing the dialogue to the next level, expanding or replicating dialogue activities, creating long-lasting structures for change.	Sustaining Outcomes	The partners are moving on and activities are scaled up.	Sustain Action and Impact	Facilitate and refine. Support implementation (alignment to goal and strategies). Continue engagement and conduct advocacy. Collect, track and report progress (process to learn and improve).

Examining these and other models reveals a pattern in the requirements for building a functional collaboration system between multiple actors with different interests. The phases reveal a gradual shift from issue-related, less-functional human interaction patterns to a new arrangement of more functional interaction patterns, which enhance aliveness in a specific socio-ecological context. Attention to success factors anchored in the human competency dimensions and the underlying principles can help actors navigate interaction patterns without overwhelming stakeholders and systems. Every context, and subsequently every stakeholder collaboration system, is different. Different phases need to be stewarded in quite different ways, even if each requires the presence of the success factors. Process management must invigorate the human competencies described in the Collective Leadership Compass in different ways. From a meta-perspective, the four phases are necessary in growing such a collaboration system into a form of interaction that is likely to deliver the envisioned change.

Phase 1: Preparing a system of actors for collaboration

Phase 1 includes capacitating initiators, gaining the support of high level actors in change processes, sensitizing a larger group for stakeholders to the envisioned change, and equipping key actors with dialogue and process competency so that they can structure their collaborative endeavor in a systematic way. Relationship management, including attention to trust-building, mutual understanding, and connection with the larger purpose, are key process elements in the **first phase**. They ensure that fewer difficulties will show up in later stages such as disagreements around governance mechanisms, implementation plans, or monitoring procedures. The establishment of organizational or representational structures should not receive too much emphasis in this phase. The focus is on building a collaborative field among the different actors that come together. Gaining understanding for each other and creating a certain degree of emotional cohesion supports the emergence of a collaboration system that can be sustained throughout all phases (Kuenkel and Aitken, 2015).

Emerging interaction patterns in this phase can be described as:

- A core group with a strengthened intention to collectively address an issue of common concern;
- The growing resonance for change among multiple stakeholders;
- A growing awareness of the dysfunctionality or constraints of the current situation;
- The perception of a different future (albeit vague) among multiple stakeholders;
- The seeds of change in the form of a first core group that feels responsible for the collaboration initiative and sufficiently understands the context.

Phase 2: Establishing the collaboration system

Phase 2 includes formalizing structures of consultation and cooperation among stakeholders and clarifying roles and responsibilities in implementation. Visions that induced the

collaboration initiative in Phase 1 get tested, refined, and agreed on among all actors. Phase 2 often requires a joint diagnosis of the current reality, and a true co-design of a vision, a change intention, or the future envisaged state. Necessary forms of agreements, plans, and human resource structures are established. If structure is not sufficiently emphasized in this phase - e.g. through clarifying goals, agreements, roles and responsibilities, - the potential of the emerging collaboration system gets lost. A certain degree of containment through structure is necessary to hold a complex endeavor together.

Emerging interaction patterns in this phase can be described as:

- A gradually consolidated stakeholder collaboration system of which all actors feel a part;
- A 'conversation of the system with itself' in the form of structured dialogues around joint analysis of the current situation and co-design of future envisaged state;
- Clear goals and process including a mutual understanding of learning mechanisms as well as accountability procedures.

Phase 3: Ensuring the outcomes of collaboration

Phase 3 is about getting things done. In this phase, agreed-upon or recommended activities are carried out. Progress or outcomes are evaluated. Stakeholders either implement activities jointly or in a coordinated way. Most collaboration initiatives establish sequences of regular stakeholder meetings where progress is reviewed and implementation strategies are adjusted. This can include content working groups or the allocation of implementation responsibilities to different stakeholders. Monitoring and evaluation practices and iterative learning mechanisms need to be firmly established, so that joint readjustment of strategies can take place. If both structure (e.g. implementation plans, monitoring and governance structures, learning mechanisms, etc.) and process (e.g. celebrating success, sharing results, staying tuned to the joint endeavor through communication and relationship building, etc.) do not receive the necessary attention in Phase 3, actors tend to drop out, lose a sense of ownership, stop implementing, get into conflicts, or start operating in silos. The skill of key actors in managing the dynamic balance between process and structure makes complex collaboration processes effective in implementation.

Emerging interaction patterns in this phase can be described as:

- An operational stakeholder collaboration system that is functional in delivering results;
- Identity formation that regenerates the collective intention as all stakeholders feel part of a larger movement for change;
- Consolidated dialogue structures that cater to different purposes such as learning, review, innovation, and evaluation.

Phase 4: Taking collaboration to the next level

Phase 4 is about taking the collaboration initiative to the next level, expanding or replicating

its activities, and creating long-lasting structures for the envisaged change. This includes evaluating context-specific success factors and forming a change-maker community. It can include meta-collaboration, or the cooperation between different multi-stakeholder collaboration initiatives. In some cases, this requires the establishment of lasting stakeholder engagement structures and a knowledge management structure that enables key actors to transfer their experience to other change initiatives. Success needs to be adequately celebrated: participation and contributions of individual stakeholder groups should be acknowledged and appreciated. When a collaboration initiative develops further, new stakeholders need to be integrated into the process, especially when the implementation of change is handed over to a third party. Previously uninvolved actors must quickly understand the urgency and importance of an initiative and be able to emotionally connect with the larger goal. The process from a more loosely structured initiative to an institution is not necessarily easy. Replication or institutionalization often requires a professional management structure. Role change and decision-making structures must become more efficient. Existing management structures require additional legitimacy and credibility. A decisive factor for the success of in this phase is that new actors are integrated and take the change intention further.

Emerging interaction patterns in this phase can be described as:

- A consolidated stakeholder collaboration system with lasting structures;
- Mechanisms for renewal and innovation;
- An engaged system of actors beyond the actual collaboration system.

This brief illustration of the requirements and interaction patterns of the different phases of multi-stakeholder collaboration hint at the need for an enhanced capacity of a collective of actors to steward such complex change together. But it leaves an important question open: Who leads the transformation? The capacity to implement high-quality process management as a prerequisite for transformative change is an often-underestimated contribution to the effectiveness of multi-stakeholder collaboration (Hanna, 2011; Kuenkel, 2016). Leadership is often not visible nor seen as important to actors. However, in successful multi-stakeholder collaboration, actors, who work together consciously, enact enormous change. Yet leadership plays an essential role in shifting the dysfunctional pattern into better functionality.

This dissertation argues for a need to grow the capacity of various stakeholder groups to bring about constructive change in collaboration. It suggests that distributed and collective leadership is an integral part of shifting dysfunctional patterns of human interaction into better functionality. Indeed, there is room for actors in stewarding roles in complex stakeholder collaboration. Whether they are seen as system leaders (Senge et al., 2015) or supporting players that create cohesion among stakeholders, who then lead collectively, is still open for further exploration. The following section briefly describes the role of backbone support (Hanleybrown et al., 2012) in complex stakeholder collaboration.

6.2.3 The Role of Backbone Support in Multi-Stakeholder Collaboration

Overcoming the complex challenges of sustainability transformation requires a more conscious understanding of the way that dysfunctional systems can be identified and shifted to more functional interaction patterns. Cross-sector cooperation, multi-stakeholder collaboration, partnering between institutions, and operating in international networks have moved onto the international agenda (Waddell et al., 2015; Kuenkel, 2016; Senge et al., 2015; Kania and Kramer, 2011) as laboratories for the collective leadership practices needed to effect transformative change. Leading transformative change under complex circumstances is never the task of an individual, not even a heroic individual with a lot of followers. Transformation in complex change endeavors requires different leadership roles that work in partnership to bring about change towards a more alive, hence, more resilient system pattern across cultural, institutional, ideologies, or organizational boundaries (House, Javidan, Hanges and Dorfman, 2002; Kuenkel, 2016; Senge et al., 2015). One such role is to provide backbone support. The collective impact approach (Hanleybrown et al., 2012; Kania and Kramer, 2011) takes backbone organization to be a critical component in successful change initiatives that aim at achieving collective impact. Turner, Merchant, Kania and Kramer et al., (2012) report: “Through our research, we also gained insight into the value of backbone organizations and their leaders. Across organizations, the value of backbone support was commonly viewed as unmistakable; individual partners could not do the work of collective impact without it” (p. 1). Backbone support is defined here as the availability and use of independent, funded staff resources to provide ongoing support to the management of the stakeholder collaboration process. This can include developing guiding visions and strategies, coordinating implementation activities, or establishing reflection and learning mechanisms (Hanleybrown et al., 2012; Turner et al., 2012). The most important task of backbone support is to design the process of stakeholder engagement and implementation collaboration described in the section above. Kania and Kramer (2011) suggest:

Backbone organizations embody the principles of adaptive leadership: the ability to focus people’s attention and create a sense of urgency, the skill to apply pressure to stakeholders without overwhelming them, the competence to frame issues in a way that presents opportunities as well as difficulties, and the strength to mediate conflict among stakeholders (p. 40).

Often, the backbone support is the glue in a complex multi-stakeholder collaboration with differing interests. It needs to be neutral with regard to the actors involved, and ideally independently funded or funded by all, but engaged with the joint transformative goal to be achieved. It focuses on managing high-quality processes, establishing shared learning and evaluation, and mobilizing additional resources. Hence, backbone support is an example of how transformation processes are collectively stewarded. It is a leadership role that ideally enhances the collective leadership capacity of the stakeholder collaboration system.

Backbone support for partnering and multi-stakeholder collaboration can vary tremendously depending on the purpose, form, and function of the partnering effort. There are at least three possible ways that complex multi-stakeholder initiatives work with backbone support.

Catalyst Role

Backbone support can have the role of catalyst for multi-stakeholder collaboration around an issue of common concern.

Complex change initiatives around SDG goals with multiple actors are often catalyzed by backbone organizations that see the possibility for change, but do not have a particular stake in it, or know that only multiple actors can achieve the envisaged results. These can be civil society organizations, development agencies, government departments, corporations, or coalitions. They do not need to be neutral towards the SDG goal or content issue, and they can even be passionate about the purpose. But they need to be neutral with regard to the different stakeholder institutions in collaboration. They can only fulfill their role as supporter and broker if they gain and maintain the trust of all stakeholders involved.

Caretaker Role

Backbone support often functions as caretaker and process facilitator.

Collaboration efforts with multiple stakeholders require professional support, often in the form of a secretariat, to organize, coordinate, and drive outcome orientation. This is important not only at the beginning, but throughout the collaboration life cycle. Most often, this kind of backbone support is already mandated from the beginning of a collaboration project. Otherwise, it needs to gain such a mandate as the initiative develops. Even less complex partnering efforts become more effective when neutral supporters, professional facilitators, or individuals with expertise in collaborative and cross-sector process management accompany those (Hanleybrown et al., 2012).

Capacity-building Role

Backbone support can function to build capacity.

Multi-stakeholder collaboration efforts are greatly enhanced if the participating actors develop a common understanding of the framework for effective collaboration and the principles of how to manage complex collaboration processes (Buuren, 2009). If the knowledge of how best to steward transformative changes collectively remains solely within the backbone support organization, the system of actors may come to depend on continuous support. Hence, beyond the actual process support, backbone organizations must build the capacity of actors to steward successful collaboration processes. Integrated capacity building for partnering, particularly in the preparation and building phases, can greatly enhance the effectiveness of the partnering effort (Kuenkel and Aitken, 2015).

Funders who allocate resources to partnering have so far underestimated the importance of backbone support in the effectiveness of collaboration initiatives (Kuenkel, 2017b; Pattberg and Widerberg, 2014; Turner et al., 2012). When insufficient time is allocated for collective reflection on the process, impact, and quality of collaboration, complex collaboration processes are more likely to fail. Backbone support, whether from mandated organizations, individually contracted process facilitators, or participating stakeholder groups, can ensure that collective reflection takes place. Resource allocation for backbone support is an important factor for success and is closely linked to quality process management in

transformative efforts. Leading transformative change collectively, this dissertation argues, is greatly supported by backbone institutions that are skilled in facilitating complex change processes. But it also suggests that conceptual knowledge about and tangible skills in managing complex collaboration processes need to take root among many more actors, and should be anchored within all collaborating institutions.

The following case examples explore two multi-stakeholder collaboration processes, in which the interplay between backbone support and participating stakeholders has led to more functional interaction patterns among multiple actors and increased their capacity to navigate transformative change collectively.

6.3 Case Examples: Shifting Dysfunctional Patterns Through Multi-Stakeholder Collaboration

The role of multi-stakeholder collaboration in rearranging patterns of interaction in socio-ecological systems will be illustrated by two examples. The first example is a longer-term multi-stakeholder process on the international level targeting the sustainable supply of green coffee. The second example is an 18-month-long local collaboration process to improve governance structures for water resource management in a province in Tunisia.³⁰

6.3.1 Example 1: The Global Coffee Platform

Shifting Patterns of Interaction in the Global Coffee Market

The Global Coffee Platform inaugurated in October 2016 is an inclusive multi-stakeholder platform with the goal of creating coherence among the sustainability activities of many diverse stakeholders from the public, the private and the civil society sectors, and achieving a thriving and sustainable global coffee sector.³¹ The platform commits to a bottom-up approach that supports actors from public and private sectors in coffee-producing countries to develop a common vision that addresses critical sustainability challenges in coffee production and brings national issues into a global agenda for sustainable coffee production. The ultimate aim is to improve the livelihoods of coffee farming communities around the world, and to keep the natural environment of coffee production areas intact. It is a suitable example of how a complex global challenge is addressed with multiple actors and causes in a mix between local action and global reach. The platform is an example of how to gradually build a global and collaborative transformation system, by taking on one commodity and working towards the implementation of SDG 12 on sustainable production and consumption.

³⁰ In the first example the author had the role of strategic support to a backbone project secretariat composed of private and public sector actors, between the years 2003 and 2007. The complex multi-stakeholder initiative was institutionalized as the 4C Association in 2007. In the second example colleagues from the Collective Leadership Institute functioned as backbone support for 1 ½ years. The Nebhana Water Forum was launched in May 2016. In both cases the financial support for the activities came from the German public sector. The practice model, the Collective Leadership Compass, was applied to the design of the collaboration process. In the first example it was a much less structured pre-version; in the second example the version described in this research was used.

³¹ See: <http://www.globalcoffeeplatform.org/about/our-history> accessed on 1st July 2017

The history of the platform shows that a carefully constructed multi-stakeholder collaboration process can increase reach and impact and grow all actors' awareness of the complexity of an intractable challenge like the unsustainable production and consumption patterns of the global coffee system (Berger, Cunningham and Drumwright, 2004). The global coffee platform is a merger between the Sustainable Coffee Program, founded in 2011, and the Common Code for the Coffee Association (4C Association), founded in 2007³². The association's membership was comprised of stakeholders from the coffee industry, coffee growers, and civil society organizations. Membership exceeded 300 in 2014, with members from 21 countries representing 360,000 coffee producers. Members apply sustainability standards developed through a multi-stakeholder collaboration process. The following section will focus on the development of the 4C Association between 2003 and 2007.³³

The long collaboration journey started off in 2003 with a first meeting among various stakeholders on how best to enhance sustainability in the global coffee supply chain. Already in 2003, the emerging initiative was understood as a first step towards more sustainability in the entire coffee value chain. It ultimately sought to mainstream sustainability in the entire global coffee sector. A core group of stakeholders from private and public sectors considered the initiative a pioneering attempt to change unsustainable trends in the global coffee market. In 2002, the coffee sector was characterized by great asymmetry in the redistribution of outcomes between producing and buying countries. Large business actors could set requirements in terms of time, volume, and prices for a very large number of small-scale producers who competed for a share in the international market. This trend limited economic returns and carried threatening environmental and social effects for producers (Kaplinsky, 2000). In particular, small-scale producers often remained outside the international market flow, receiving ever-diminishing returns for their produce (Kuenkel et al., 2009).

Over the years, the multi-stakeholder initiative succeeded in growing a global community that joined forces to continuously improve the social, environmental and economic conditions for people making their living from coffee. Main pillars of the initiative in the first 10 years were a code of conduct, support mechanisms for coffee farmers, and a verification system for sustainable coffee. More than 100 representatives from over 25 coffee producing countries participated in the development process.³⁴ Few initiatives have made such a deliberate attempt to integrate representatives from the entire global supply chain in the development of a standard. Most other voluntary standards were developed by a few actors in the supply chain, and most often, by industry in developed countries³⁵ or by international NGOs,³⁶ and then conveyed to producers as a requirement for compliance and market access.

The 4C initiative chose **a responsible supply chain community approach**, gradually building a collaboration system that eventually expanded into a global membership

³² See the speech of Joaquim Leite, President of the 4C Association at the 'Official launching of the 4C Association', 21 September 2007, Haus der Bundespressekonferenz, Berlin, Germany

³³ The process has also been described in more detail in: Kuenkel, P., Fricke, V. & Cholakova, S. (2009). The Common Code for the Coffee Community. In: Volmer, D. *Enhancing the Effectiveness of Sustainability Partnerships*, National Academies Press

³⁴ 4C Official press conference, 23.04. 2007

³⁵ E.g. the Business Social Compliance Initiative (BSCI), several standards in the flower industry, the "Cotton Made in Africa" Standards, etc.

³⁶ E.g.: The standard of the Forest Stewardship Council (FSC).

organization. While member coffee producers committed to implementing the standard in a process of continuous improvement, traders and roasters committed to increasing their sustainable sourcing and contributed to capacity development in sustainable coffee production for producers. Membership fees introduced in 2007 were graded according to coffee turnover, with a token fee for small producers and a rather substantial amount for international traders and roasters.

The idea of initiating a broader multi-stakeholder partnership for sustainability in the coffee sector had emerged as a result of experiences from different public-private partnership projects in the commodity sector between large multinational corporations (MNCs) and the German Development Cooperation. Although a number of sustainability projects had been successful in the area of green coffee production in a several countries, good results were often limited to a particular project region, and often counteracted by market developments.³⁷ Although some projects supported specialty coffee standards (e.g. Fair Trade coffee), they had little impact on the mainstream coffee production. Real change required a global learning network that would facilitate a broader impact. Growing pressure from consumers, particularly in Europe, made companies in the coffee industry with a strategic vision aware of the need to secure a responsibly produced green coffee supply in the medium and long-term.³⁸

The initiative started by diagnosing the situation in the global coffee market, drawing on cooperation from major industry and development stakeholders. This generated the insight that developing a baseline standard for sustainably produced green coffee should emerge from a joint understanding of existing problems and possible solutions in the sector that included input from producers. By mid-2002, the German Development Cooperation and the German Coffee Association (DKV) had gathered a broad group of potential stakeholders, including leading corporations in the European coffee industry and large producer organizations from some of the most important coffee producing countries. Civil society organizations were also invited from the very beginning in order to integrate their critical point of view, expertise, and implementation potential. The devastating impact of coffee price decreases for small-scale coffee farmers and the structural deficits in the coffee value chain made it necessary to seek a broader approach to take essential step towards 'mainstreaming' sustainability.

In the context of this dissertation, the dynamics in the global coffee value chain constituted a typical wicked problem, or intractable challenge. The negative path dependencies of the 'race to the bottom' in coffee prices and the subsequent impoverishment of coffee farmers could not be addressed within the constraints of any one stakeholder's leeway of action. Producers were unable to reinvest in the production process and to maintain the quality of green coffee, which threatened the long-term interests of the whole sector. The initiative continued with a focus on the collaborative development of a code of conduct for green

³⁷ According to information from a project leader of the German Development Cooperation

³⁸ According to members from trade and industry

coffee production that took into account existing specialty standards³⁹, but was designed in a way that it would encourage a broader group of coffee producers to improve the sustainability of their production. This was accomplished through an arduous collaboration among all stakeholders that took two years. Stakeholders were aware that a code of conduct could begin to address some of the underlying structural deficits in green coffee production and processing.⁴⁰ They saw the code as an important step in addressing imbalances and substantially improving production conditions, and ultimately in addressing the economic insecurity of suppliers and improving operations along the entire coffee supply chain.⁴¹

The 4C initiative developed quickly into a larger transformation system in the form of a broad alliance between the European coffee trade and industry, some of the most relevant producer organizations in exporting countries in Latin America, Asia, and Africa (accountable for about 80% of coffee production worldwide), and important internationally active civil society groups. Some of the latter had increased the urgency for action by creating public awareness of the deteriorating conditions in the coffee sector through active campaigning. The project also attracted the attention of other international organizations such as the UN-affiliated International Coffee Organization (ICO), the World Bank, and the International Labor Organization (ILO).

Stakeholders joined the initiative for different reasons. The desire to improve quality and supply security and manage reputation drove larger corporations (mainly European coffee roasters, but also traders) to participate. Some of the larger European roasters were aware of the rising consumer pressure towards social and environmental sustainability in value chains. They became interested in a long-term solution to ensure that the entire supply was coming from sustainable sources.⁴² Producers expressed concerns about endangered economic viability, volatility in prices, low productivity, no access to credit, lack of tools to deal with market volatility, and a desire for improved markets (Raynolds, Murray, and Heller, 2007). Their interest in joining the partnership was essentially based on securing and improving their markets; however, one of their main hopes, clearly articulated in the beginning of the partnership, was higher prices for green coffee.⁴³ Civil society organizations joined the partnership for different reasons specific to their themes and constituencies. Fig. 6 shows the composition of stakeholders in the first two years between 2003 and 2005⁴⁴.

³⁹ Such as standards for organic coffee or Fair Trade coffee

⁴⁰ Source: Interviews with participating actors

⁴¹ 4C Press Release, April 23rd 2007

⁴² Source: Interviews with trade and industry participants in 2005

⁴³ Source: Interviews with participants from civil society organizations in 2005

⁴⁴ Source: Internal document produced by the project secretariat



Figure 6: Institutional participants in the steering committee of the 4C Initiative⁴⁵

All participating NGOs and trade unions were concerned with the living and working conditions of coffee workers and small-scale coffee farmers. Their motivation to join was based on the opportunity for dialogue with business actors regarding more responsible supply chain management. The 4C initiative can be explored as a case example of how to shift dysfunctional patterns of interaction typical in a global commodity value chain that create unsustainable production with environmental and social damages (Raynolds et al., 2007). The new and more functional collaboration patterns, which developed through this multi-stakeholder initiative, can be seen as a fractal of what was envisaged to happen in the larger transformation system of the global value chain of coffee.

To make this multi-stakeholder partnership a success, and enable such diverse actors to work together across organizational and mental boundaries, new professional skills were required. These included the design of a high-quality communication process, the effective support for collaboration among different interest groups, the continual consensus building for agreed upon goals, and the constructive mediation of conflicts. Backbone support in the form of strategic guidance, process design, and facilitation of dialogue and collaboration structures was delivered by a mandated project secretariat, composed of members from the private and the public sectors. They were supported by a strong core group of initiating actors from the coffee industry and the German Development Cooperation.

The following section describes the critical elements of a process design that enabled stakeholders to jointly lead progressive change in an international, complex, and often fragile multi-stakeholder initiative that represents a landmark for transformative change in a

⁴⁵ Source and copyright: Gesellschaft für technische Zusammenarbeit

commodity sector (Kuenkel et al., 2009). It is analyzed using the integrated description of phases in multi-stakeholder collaboration initiatives from the previous section. For Phases 1 and 2, it shows how the Collective Leadership Compass inspired process designs and action planning, and how this related to success factors for multi-stakeholder collaboration.

Phase 1: Preparing actors in the global coffee community for collaboration

The *preparation phase* of the 4C initiative served to prepare the disparate system of actors for collaboration, a new and unfamiliar pattern of interaction. Its goals were shaping the idea in dialogue, understanding the context, and initiating the multi-stakeholder initiative. Emphasis was placed on building trusting relationships, testing existing and possible future cooperation, and learning from past positive and negative experiences. This included a detailed context and actor analysis (including conflict mapping) through informal dialogue, in order to engage potentially interested stakeholders that could support the initiative. Consultations with relevant stakeholders helped identify major issues and establish a clearer understanding of the challenges in the sector. The official launch of the 4C initiative was preceded by more than a year of consultative dialogue across private, public and civil society sectors. The initiative extracted important insights from the challenging learning experiences of other voluntary standard setting initiatives in the commodity sector, particularly regarding ownership, inclusion of stakeholders and mainstream applicability. This shaped the community approach and structured the process designs.⁴⁶

The main strategy in the first phase was to create ownership of both process and content for as many participants as possible. A small cross-sector team met, exchanged ideas, and received inputs from interested and knowledgeable people. Informal conversations became a forum for screening of possibilities of re-shaping dysfunctional relationships in the coffee value chain. The idea to develop a mainstream standard for sustainable green coffee production matured, received critique, was further refined, and developed a healthy level of resilience. As a result, a network of interested people emerged even prior to the official launching of the initiative, and the visionary idea of developing a mainstream standard slowly began to take root.

Another insight was that a real sense of ownership called for a continuous commitment to tripartite participation. Coffee trade and industry members, producer associations, and representatives from civil society organizations had to jointly develop the voluntary basic standard in order to achieve the broadest possible ownership. This, however, required people who would facilitate the process of dialogue, joint decision-making and balancing interests, and take on the logistical coordination of stakeholder involvement. As backbone support, the secretariat had a servant leadership role in facilitating communication, consensus building and effective decision-making. The ownership of the initiative rested with a multi-stakeholder governance forum. Fig. 6 shows the composition of the tripartite steering committee. Funding for meetings and the work of experts and the project secretariat came from both private (coffee industry) and public (German and Swiss government) funding. This

⁴⁶ Source: Interview partner who initiated the partnership, 2007

balanced funding was considered essential for the consensus-building process. The attempt to create an international mainstream coffee standard involving several big roasting companies at the table received scrutiny from the European and American Anti-Trust-Authorities. Any suspicion that the initiative planned to intervene into free market laws or distort open competition would have caused an intervention. Despite the challenges and the absence of easy solutions, the initiative found support in many different countries in Asia, Africa, and Latin America. Many actors realized that there was a real chance to affect the structural imbalances in the coffee production.

Table 11 shows an example of how activities in Phase 1 attended to the human competency dimensions of the *Collective Leadership Compass* and how this can retrospectively be related to success factors for multi-stakeholder collaboration.

Table 11: Improving collaboration effectiveness in phase 1

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Dimension	Aspects	Success factor:
HUMANITY	Empathy: Building relationship between diverse and controversial key stakeholders.	Mutual understanding: Initiators understand concerns, interests and constraints of key stakeholders; enabling them to understand each other's concerns.
COLLECTIVE INTELLIGENCE	Dialogic Quality: Building resonance for the purpose of the initiative through informal conversations during a number of coffee related conferences.	Structured dialogue: Initiators engender bilateral and small group informal, yet inspiring conversations around the purpose of the initiative.
ENGAGEMENT	Process Quality Building a core group of visionary actors and designing of step-by-step engagement of more stakeholders. Establishing backbone support.	Engagement management: Initiators convene small group of engaged and future-oriented key stakeholders to form the core group of the initiative. This group engages more stakeholders. Establishment of initial small project secretariat.
FUTURE POSSIBILITIES	Future Orientation: Exploring possibilities and variations of what a standard could resemble and the requirements to jointly develop it.	Goal clarity: First iteration of future scenarios by core group and broader engaged key stakeholders.
INNOVATION	Agility: Being flexible in the process design and utilizing emerging opportunities.	Flexibility: Core group and key stakeholders develop purpose-driven, short-term, "not too fixed" initial project strategy.
WHOLENESS	Contextuality: Researching existing niche market standards and their feature in relation to the proposed mainstream standard.	Context management: Core group tasks project secretariat to analyse formats and effectiveness of existing niche market standards. Joint discussion of insights.
	Contribution: Keeping the potential visionary impact of the initiative of an entire value chain towards sustainability high on the agenda, even if no roadmap towards the goal could be designed at this stage.	Impact management: Core group strengthens emotional engagement of key stakeholders by regularly referring to the potential larger impact of the initiative in informal conversations.

Phase 2: Establishing the 4C initiative as a collaboration system

The *building phase* of the 4C initiative was devoted to reshaping the goal, clarifying resources, creating a structure for the initiative, and agreeing on a plan of action. After the official launch of the initiative, most stakeholders already felt that they were an integral part of

the initiative. This group of shareholders was selected to strike the right balance between engaging interested groups and official representatives. The former were important to drive the process, the latter crucial to legitimize it. The service attitude and content expertise of a project secretariat not only ensured consensus-building meetings, integration of multiple perspectives, and reliability of process, but also helped drive the vision and include the expertise needed to explore all possible solutions to mainstream coffee market challenges. The result was an agreed-upon implementation plan, a budget plan for future financial contributions by the industry, and an allocation of roles between the stakeholders. Expert working groups started to focus on the technical aspects of the standard.

Table 12 shows an example of how activities in Phase 2 attended to the human competency dimensions of the *Collective Leadership Compass* and how this can retrospectively be related to success factors for multi-stakeholder collaboration.

Table 12: Improving collaboration effectiveness in phase 2
(Copyright by the author)

Dimension	Aspects	Success factor:
ENGAGEMENT	Process Quality Developing and jointly agreeing on a roadmap for implementation.	Engagement management: Project secretariat and core group convene larger group of engaged and critical key stakeholders to diagnose current challenges and agree on the first 1-year roadmap.
	Connectivity: Creating structures (agreement, organizational set-up, and working groups) sufficient enough to ensure the cohesiveness of the collaborating stakeholders.	Network and relationship management: Project secretariat sets up collaboration structures such as participation procedures and issue related working groups.
	Collective action: Ensuring that all meetings are focused on jointly agreed results.	Result orientation: Project secretariat provides transparent implementation plan; results from working groups are evaluated by all key stakeholders.
COLLECTIVE INTELLIGENCE	Dialogic Quality: Designing a communication architecture that ensures regular meetings of stakeholders.	Structured dialogue: The roadmap agreed shows how the initiative is brought forward in a sequence of stakeholder meetings.
	Diversity: Ensuring all perspectives could get heard, appreciating diverse contributions.	Inclusivity management: Project secretariat ensures facilitation of structured dialogue that brings all different perspectives to bear.
HUMANITY	Balance: Creating opportunities for informal interaction and people to get to know each other as people during all meetings.	Balance of power and influence: Project secretariat plans informal events around stakeholder meetings that help actors to understand different world-views, constraints, etc. (e.g. field visits to target groups, or companies).
FUTURE POSSIBILITIES	Future Orientation: Envisioning a different future of the coffee value chain together with all stakeholders.	Goal clarity: Second iteration of future scenarios by all relevant key stakeholders.
	Empowerment: Creating a steering committee composed of all stakeholder groups that functioned as decision-making organ for the implementation process.	Governance: Project secretariat organizes a structured procedure to establish a representative steering committee for the initiative.
INNOVATION	Excellence: Bringing in expertise on the issue of sustainability standards, certification, and	Knowledge management: Project secretariat and core group bring experts for specialized inputs into stakeholder meetings.

Dimension	Aspects	Success factor:
	capacity building for farmers.	All stakeholders jointly discuss insights and relevance.
WHOLENESS	Contextuality: Regularly reassessing the stakeholder analysis and the wider field of actors.	Context management: Core group and project secretariat conduct stakeholder and conflict analysis.
	Contribution: Keeping the potential visionary impact of the initiative of an entire value chain towards sustainability high on the agenda, even if no roadmap towards the goal could be designed at this stage.	Impact management: Core group strengthens emotional engagement of key stakeholders by regularly referring to the potential larger impact of the initiative in informal conversations.

The *implementation phase* emphasized the development of the standard and the agreement on the rules of participation for new industry members to join. It required a regular reinforcement of the vision for the potential impact during stakeholder meetings, which were not free of conflicts. Mistrust never completely disappeared, yet all stakeholders learned to stay in a collaborative field and move towards tangible results. Discussions in the multi-stakeholder forum often moved between political negotiation processes and practice-oriented pragmatic communication about the feasibility of certain elements of the code of conduct. But every time the political positioning moved to the forefront, the actual practical work and the potential to influence the global coffee market helped people to achieve outcomes despite a considerable amount of distrust towards each other. Rigid worldviews shifted as a result of exposure to different ways of seeing and, just as important, through personal encounters. Participants moved away from just being representatives of their organizations, and a new quality of cooperation emerged. This was reflected by professional results.

Meetings were not always free of conflict. Sometimes conflict was caused by the dominance of certain people; sometimes it was the obvious power of one stakeholder group that endangered the consensus-building process. Occasionally a whole stakeholder group threatened to leave the initiative. But two years into the collaboration process, the bond of the collective intention had grown strong enough to sustain the process. Conflicts could be expected, but also overcome in a constructive way. Whenever accurate content knowledge was missing, hardened political positions revived. To prevent this from happening the project secretariat provided as much information as possible and, if needed or requested, invited experts on certain topics to fill knowledge gaps and facilitate an informed decision-making. Building trust between formerly very skeptical and judgmental stakeholders was central to the success of the initiative. While at the beginning every potential conflict deepened the trenches between different and mutually distrustful stakeholders, over time all actors gained the faculty to deal with conflicts in a more rational and respectful way.

After two years, the code of conduct for green coffee production had been developed and the initiative began to focus on the operational challenges of disseminating the voluntary standard and engaging the wider community to apply it. This was a critical juncture, as new stakeholders needed to get involved, ownership for the long-term vision needed to take root among many more actors, and the initiative needed to find innovative ways of getting producers to apply environmentally and socially improved production processes. The networks of the committed actors involved facilitated this implementation. Because of its

transparent and respectful network strategy the project could build on many involved actors who were interested to contribute their share in making the implementation a success.

The ***institutionalization phase*** started when stakeholders unanimously agreed to establish a non-profit organization to provide the future formal structure for the initiative. This global membership organization – the 4C Association – was dedicated to implementing sustainability in the coffee sector and open to coffee chain participants ranging from small coffee farmers to large roasting companies as well as to all other supporters. The dialogic process design drew together many people behind the idea of adhering to ecological, social and economic baseline standards. The formation of a membership organization was the logical next step. At the beginning, no one would have thought about the possibility of creating such an organization. The idea developed through continuously reflective learning.⁴⁷ The initiative began to focus more explicitly on facts and figures, such as the amount of coffee traded that received the verification of the code of conduct. This attracted new members who not yet considered sustainable coffee to be relevant to their business.

Not every step in this process was smooth. Although the initiative kept integrating new participants, there were always people, who felt they were excluded or would not benefit. Conveying the community message of the 4C Association to as many people as possible in the coffee chain, down to the level of the farmer, consumed many more resources than initially expected. It was hard to know when outside criticism was a sign to learn and when it was simply competitive. But the intensive consultation and dialogue process was rewarded by the fact that many more organizations and individuals worldwide committed themselves to become members of the new institution.⁴⁸

A fifth phase, which can be called a ***meta-collaboration phase***, began when it became clear that parallel activities were taking place at the global scale that partly complemented and partly contradicted the activities of the 4C Association. The identities and territories of the two institutional actors, the 4C Association and the Global Coffee Program, sharpened, yet many stakeholders in the coffee industry were involved in both. They suggested collaborating to avoid duplication efforts and increase effectiveness. This paved the way to develop a long-term joint sustainability vision for the global coffee sector and to merge the two organizational purposes into a **larger transformation system** that would accelerate the envisaged global impact. This new organization was inaugurated in October 2016.

6.3.2 Example 2: The Nebhana Water Forum

Shifting Dysfunctional Patterns of Interaction in a Water Resource Management to Secure a Region's Future

In some regions of the world that are profoundly endangered by climate change, water scarcity is a serious challenge with potentially global impact (Hanjra and Qureshi, 2010;

⁴⁷ Source: personal conversations with the initiators

⁴⁸ Source: personal conversations with the initiators

Vörösmarty, Green, Salisbury and Lammers et al., 2000). Within the context of the 17 Sustainable Development Goals, SDG 6 specifically addresses the availability and sustainable management of water (and sanitation). This goal assumes quite a different dimension for directly affected farmers when the irrigation water they need reduces to a trickle, temperatures climb to records of 50°C, and the ability to exist economically by crops and vegetables is wilting away. Tunisia has limited water resources, of which 82% is used for agriculture. Most farmers rely on groundwater or dam reservoirs for irrigation. However, climate change, mismanagement and overexploitation of the existing water resources have led to a severely strained situation that is also endangering the water supply to some cities. At the same time, population growth and increasing per capita consumption, as well as the climate change related rise in significantly higher temperatures (Dhehibi, Lachaal, Elloumi and Messaoud, 2007) have increased demands for water.

The government of Tunisia is developing a national strategy for Integrated Water Resource Management (IWRM) that aims at improving water management without compromising the sustainability of ecosystems. Implementing such a strategy requires combining innovation and technical know-how with a stakeholder engagement approach and institutional capacity building. In the region of Kairouan, a province in the south of Tunisia, the dominant source of income is agriculture. Water scarcity challenges are aggravated by increasing rates of unemployment (Jemmali and Matoussi, 2013) and a radicalization of youth who do not see a livable future. Decreasing income opportunities from agriculture and the subsequent increase of unemployed youth make it easier for terrorist groups to recruit young men from regions like these.⁴⁹ The complex interplay of these challenging factors constitutes a typical intractable challenge, in which access to water was important, but only one lever to improve or at least maintain livelihoods.

Until 2015, different actors did not cohesively address the water scarcity in the province of Kairouan. Local government officials tried to prosecute those who built illegal wells, but were afraid of getting attacked by farmers while driving in the countryside. Farmers took the liberty to steal water from pipelines, a crime that was partly sanctioned by a poorly-resourced police force and partly ignored. Farmers' associations lodged complaints with the government about inadequate distribution and allocation of water. The Collective Leadership Institute⁵⁰ was tasked as backbone support for support local actors in developing a better water management strategy and improving local living conditions. Financed by the German Development Cooperation⁵¹, it supported a collaboration process between the various stakeholders to set up a regional dialogue structure for integrated water management in a pilot region. This effort was intended to serve as a prototype for an approach that could be scaled to the national level.

⁴⁹ See for example: the Wall Street Journal, 25th February 2016 (<https://www.wsj.com/articles/how-tunisia-became-a-top-source-of-isis-recruits-1456396203>), accessed on 3rd May 2017

⁵⁰ The Government of Tunisia was supported by German Development Cooperation with GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit) as an implementing agency. The Collective Leadership Institute supported the development and establishment of the Nebhana Water Forum. For more information see <http://www.iwrm-dialogue.com/ar/cases/25/> and <http://www.collectiveleadership.de/apex/cli/our-impact/our-projects/the-nebhana-water-forum-in-tunisia/>

⁵¹ Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)

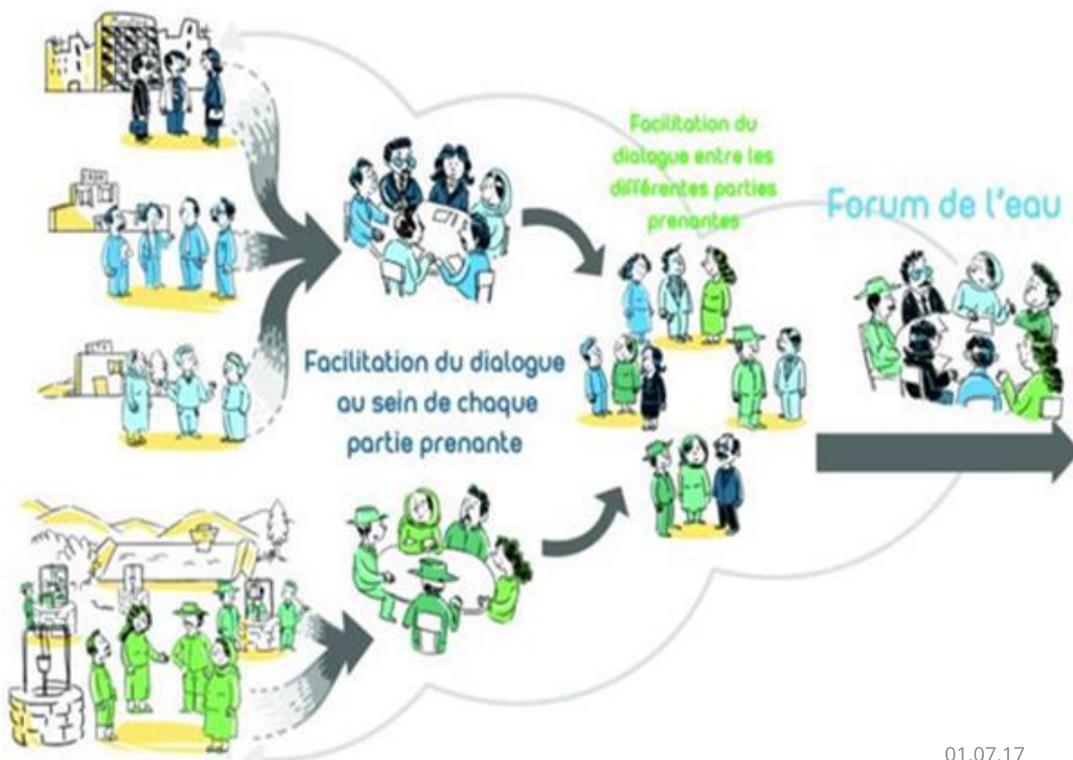
In April 2016, after a 1½-year engagement process of various stakeholders, the first water forum took place. 300 stakeholders, including farmers, farmer associations, local government departments, municipalities and local NGOs, including representatives from the National Government, participated.⁵² The intense process of engagement included a carefully designed sequence of smaller meetings with various stakeholder groups and aimed to shift the dysfunctional patterns of interaction between farmers, government officials, citizens and local NGOs. After this process, hope had emerged that the region could overcome the water crisis and work together towards improving the situation. What seemed to be a deadlock between farmers and local government was loosened, and shifted toward a jointly created path for more future-oriented management of water resources.

In post-revolutionary Tunisia, this is by no means an easy feat. In the wake of the Arab Spring, the government is eager to promote more participatory governance processes, and increase transparency for symbolic reasons and to follow up on the promise of a new and more democratic structure (Bellin, 2012). But as with any transition from an authoritarian to democratic structure, administration and citizens require time and support. And while the government administration is, on paper, committed to this transition, a deep fear of losing power and a general unease often dominates their attitude towards citizens. Farmers and other citizens, on the other hand, have to overcome decades of mistrust towards public institutions (Aras and Falk, 2015). In such a complex situation, and in a political environment prone to radicalization and violence, the idea of bringing conflicting stakeholders together to find a solution to a common problem like water management is fraught with the complexities, challenges, and paradox characteristics of volatile social systems.

Over the course of 1-½ years and with the help of the backbone support the dysfunctional systems patterns of interaction cracked. Farmers themselves started to define how they intended to jointly address water scarcity. They suggested the development of a jointly agreed-upon local water charter that would guide collective responsibilities for sound water management. In gradually increasing collaboration with the public sector, thematic working groups addressed specific issues such as irrigation, drinking water, and water distribution. The process was not about mobilizing farmers against the government, it was using a gradual, step-by-step approach to build trust in the farmers' and the government's ability to collectively co-create the future. It started small, with getting the local government on board for a new kind of change process, then inviting small farmers into meetings, conducting cross-group meetings, and continuing to build trust with the local and national government. Ultimately a water dialogue platform was established in the province, in which all major stakeholders were not only involved, but for which they were thoroughly prepared and empowered. The project was rated as rather successful by the monitoring and evaluation unit of the funding German ministry (BMZ, 2016). It required carefully and adaptively designed steps to support a dysfunctional system of actors to work towards better functionality. This was a hugely complex bottom-up process that interlinked with permission and support from actors in a top-down process.

⁵² Source: Internal progress reports to GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit)

Fig. 7 shows the step-by-step engagement process depicted as pictures showing the building up of a collaboration system for the water forum (texts from left to right: Facilitation of dialogue within each stakeholder group; Facilitation of dialogue among different stakeholder groups; Water forum)



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Figure 7: The step-by-step engagement process ⁵³

The core approach was first to create fractals of functional patterns of interaction within stakeholder groups, and then to build a new, more functional pattern of interaction between stakeholder groups. The intermediary goal was to establish a Water Forum as a lasting multi-stakeholder governance structure that would empower stakeholders to jointly implement a more sustainable, integrated water management for the region. Before the forum was established, the multi-stakeholder collaboration went through the first two stages of development: a preparatory phase and a building phase (Kuenkel et al., 2011; Brouwer and Woodhill, 2015). The following sections summarize this process, highlighting the elements of critical collaboration that enabled stakeholders to steward more functional patterns of interaction, overcome entrenched mistrust, and move into a sphere of constructive, yet clearly structured consultation and collaboration. The Collective Leadership Compass was used as a diagnostic, planning, and reflection tool by the team of backbone supporters. Fig. 8 shows the iterative process plan, which was used to communicate and adapt planning

⁵³ Source: Gesellschaft für internationale Zusammenarbeit, 2016; copyright: Gesellschaft für internationale Zusammenarbeit

between backbone support, government institutions, and the German Development Cooperation.

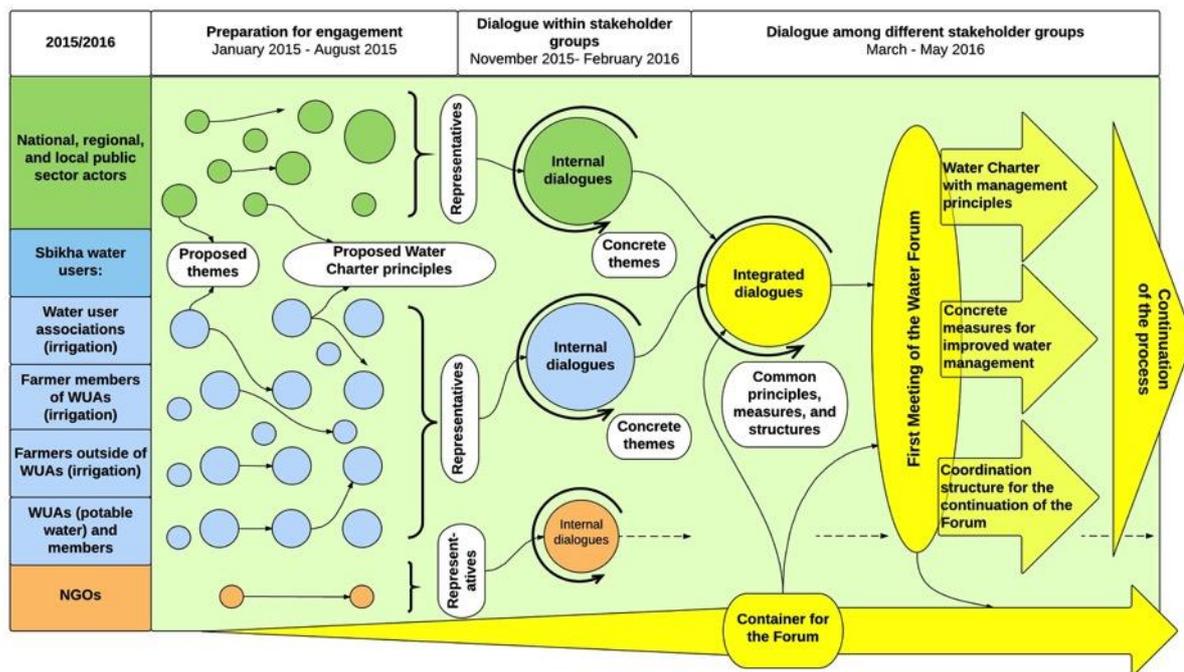


Figure 8: The iterative process design for engaging multiple stakeholders⁵⁴

Phase 1: Preparing the stakeholder system around water for collaboration

The preparatory phase focused on understanding the needs, perspectives, and concerns of the different stakeholder groups. Its purpose was to give the backbone support an understanding of the complex situation and the perspective of different stakeholders, and to allow the stakeholders to express their interpretation of the crises as well as to see the entire picture. The main stakeholders were the administration responsible for the resource management – the Ministry of Agriculture with its national, regional and local branches – and the water users in what had been chosen as a pilot region in greater Kairouan. In line with the economic structure in this part of Tunisia, the water users were exclusively farmers. Their engagement posed particular challenges. There was great variety in the size of their land holdings, the products cultivated, their access to water, and many more factors. In addition, they were geographically dispersed and not sufficiently organized, and had diverse views on the problem, potential solutions, and ways to realize them. Because of the tense political environment, the actors needed to be approached in a sensitive way. The backbone support needed to embark on a period of listening to the concerns without suggesting solutions. It placed special emphasis on understanding the situation from the perspective of farmers, and acknowledging the diversity of conditions and perspectives among them.

Gradually these listening sessions shifted into parallel dialogues between different farmers,

⁵⁴ Source: Collective Leadership Institute; copyright 2017 Collective Leadership Institute

and among government officials. The latter also received capacity building for multi-stakeholder collaboration approaches to ensure the continued application of such approaches. Because of their severe mistrust, farmers and government officials could not attend joint meetings at the beginning because at that stage, their positions were irreconcilable. Farmers saw themselves as victims of failing government services, and government officials blamed farmers for misusing and illegally obtaining water. Administrators argued that the water users had simply to abide by the law, instead of drilling illegal wells and depleting the resources beyond the agreed quota.

Six months into the preparation phase, after several dialogue sessions, the water users had come to see the need to change their behavior and become engaged, both collectively and individually. They were also prepared to enter into talks with the administration, having realized a solution to the water crisis could only be achieved through transparent dialogue and collaboration. Government officials, on the other hand, realized that simply instituting laws, regulations, and procedures would not actually reach a solution to the aggravated crisis. They began to understand the dysfunctionality of the interaction between different actors. With diligent attention to understanding context and creating resonance between both stakeholder groups, the system of actors began to look at the same situation in a new and different way. This was the starting point for a pathway of collective co-creation.

With continuous backbone support, the water users formed a network of 100 people, representing approximately 400 farmers in the pilot region. Out of this network, a further 40 were nominated to represent the group in conversations with the administration. This new level of organization among the water users led to an empowerment that proved to be the decisive factor for success in the project. For the first time, they were not just dispersed actors, but could develop their position as a stakeholder group, and enter into discussion with the administration. They took the lead in approaching the government officials to join a constructive conversation. This pushed the still-skeptical administration to act. Not only did they need to consolidate their position among various government stakeholders, but they also realized the need to change their attitude towards collaboration with the water users. At the same time, however, this unprecedented level of organization among the water users triggered a fear of losing control, which at first made the administration oppose formal dialogue with the water users. This was resolved through carefully designed capacity building on the dialogic approach provided to representatives from both administration and water user groups. It broke the vicious cycle of mistrust by creating an opportunity for informal exchange that then paved the way for a more formal engagement. With the minimum level of trust present, the initiative could move into the next phase.

Phase 2: Establishing a water-related collaboration system

The second phase focused on collective co-creation. Small cross-stakeholder dialogue forums were established. Gradually, the level of trust increased, actors began to listen to each other's positions, and a phase of constructive collaboration began. The farmers advocated the development of a water charter that would entail guiding principles for all stakeholders and would become an agreed-upon reference framework for integrated water

resource management in the area. Government officials pushed for working groups on specific problematic issues, such as well drilling and water allocation. The now-official dialogue meetings grew in size and resulted in a draft water charter and recommendations from the thematic working groups. By now the system of actors operated in a new, more collaborative pattern of interaction. A committee organized the region's first water forum that would include a variety of stakeholders.

In May 2016, the Water Forum was launched and the results of these preparatory working groups were presented to the broader public. They included agreements on measures for more integrated water management, both in the short and medium term. These included issues such as the reduction of irrigated water areas, a commitment to farming products that were low in water consumption, and financial incentives for farmers that used water saving irrigation techniques. The jointly developed Water Charter, which provided guiding principles for all further water management activities, was formally adopted at the event. It was publicly signed by representatives from both parties and thus constitutes a moral contract for administrators and water users to continue their collaboration for a better and sustainable water management in the region. A coordination committee, composed of representatives of all stakeholders, was appointed. It received a mandate at the event to structure and carry on the collaboration and to watch over the realization of the agreed-upon measures. This kind of local multi-stakeholder governance structure was hitherto unheard of in Tunisia.

The carefully designed and implemented process had many iterative learning curves. It brought two seemingly irreconcilable stakeholder groups together and helped to shift a violently aggravated pattern of mistrust and malfunction into a collaborative, constructive, and more functional pattern of interaction. The Collective Leadership Compass inspired process designs and action planning in both phases. It provided the backbone support with a meta-guiding structure that enabled a better understanding of the dysfunctional situation. It also helped to dissect the intricate and interdependent layers that made up the challenge of the problem. At the same time, the Compass did not reduce the complexity of the challenge to a 'simple', linear problem-solution definition. Used as a process-monitoring tool in an entirely unpredictable environment, it helped to keep in sight the interdependence of the challenges. Table 13 shows how the compass was used at the outset to identify patterns from the situational analysis that followed initial conversations with farmers and government officials. This became the basis of an overall (albeit iterative) process design.⁵⁵

⁵⁵ The support process was constrained by a pause of 3 months following a severe terrorist attack in the provincial capital of Kairouan.

Table 13: Using the Collective Leadership Compass for a situational analysis
(Copyright by the author)

Dimension	Guiding question for transformative process design	Situation summary and conclusions for design
FUTURE POSSIBILITIES	How to create resonance within both major stakeholder groups for the to be established dialogue and governance structure of the water forum?	<p>Both water users and the administration were unfamiliar and wary of a dialogue approach and could not envisage how a Water Forum could improve the situation. Naturally, the administration in particular was apprehensive of setting up any permanent dialogue structure that might result in a power loss on their side. The farmers severely mistrusted the administration.</p> <p>The process design needed to acknowledge current and dispersed opinions on causes of and solutions to challenges. It needed to keep the water forum as an option on the agenda without pressing too hard for its establishment. The relevance of the forum needed to emerge from the process.</p>
ENGAGEMENT	How could the large numbers of water users be adequately included in the process of shaping the future collectively? How could the realization of needing to address a joint challenge emerge?	<p>The geographical dispersion of farmers and their lack of identification as an entire stakeholder group as well as lacking structures of adequate representation challenged their inclusion in a dialogue process. Problems of water scarcity were perceived as disconnected. Farmers using access to a basin in the south did not feel their problems connected to those receiving their water from a dam in the north. Dialogue between stakeholders thrives in a space of mutual trust and belonging for each group, where identities, diverse interests and common goals can emerge.</p> <p>The process design needed to reach out to as many farmers as possible while supporting the self-organization of a structure of mandated representatives to be included in the cross-stakeholder dialogue meetings.</p>
COLLECTIVE INTELLIGENCE	How to establish consultative dialogues and constructive joint solution finding between distrustful and averse stakeholder groups?	<p>The severe mistrust between the water users and administration was clear from the beginning. Not only were they blaming each other for the current problem, neither trusted the personal integrity – an important cultural factor – or the technical expertise of the other group. Each claimed to have the ‘real’ problem and solution figured out. A fragmented ego-system needed to be shifted to a collaborative ecosystem.</p> <p>The process design needed to take a step-by-step approach in first creating stakeholder group dialogue and collaboration, invigorate the confidence to be able to shape the future, and then gradually move into structured dialogue between the averse stakeholder groups.</p>
HUMANITY	How to ensure the necessary empathy for constructive collaboration in a class-conscious society riddled with power imbalances?	<p>The class-consciousness and the fear of power loss from the side of the public administration added to the divide between both stakeholder groups and the existing wall of distrust. Traditional distribution of power relationships seemed to be almost impossible to overcome.</p> <p>The process design needed to acknowledge the traditional role of the public administration and prepare them first for a collaborative approach between different government departments. Farmer’s confidence to shape the future needed to be built without threatening the public administration and endangering reactive interventions.</p>

Dimension	Guiding question for transformative process design	Situation summary and conclusions for design
WHOLENESS	How to shift the mindset to the common good of water, to the larger picture?	<p>The interests of stakeholders not only differed, but were also narrow in the sense that they had lost sight of the bigger picture of water scarcity in the country as well as the impact of climate change.</p> <p>The process design needed to expand the particularity and narrowness of the interests of each stakeholder group and gradually build resonance of seeing the connection of the acute challenges to the regional or national situation as well as the global impact of climate change. The gradually emerging goal of better water management needed to be placed in context by recognizing its connections to climate change, sustainable agriculture, equality and participative government processes in the wake of building a new democratic government.</p>
INNOVATION	How to create space for innovative solutions?	<p>The urgency of the water challenges and the deadlock between farmers and public administration had prevented any consideration of innovative approaches to mastering water scarcity.</p> <p>The process design needed to open spaces for different perspectives on managing water scarcity, but not push for technical solution. The design needed to prepare the ground for collaboration first, and let the desire for better expertise and innovative approaches emerge in a self-driven way.</p>

The experience of facilitating the Water Forum in Kairouan showed that empowering a marginalized stakeholder group paid off in unexpected ways, even in a context like water management, where solutions tend to center on technical expertise. The support provided to farmers to develop their authentic voice in suggesting ideas and concrete solutions to the water management problem proved to be a key leverage. The suggestions were so surprisingly constructive that the previously reluctant and fearful public administration opened up to a new form of collaboration.

6.3.3 The Case Examples and the Aliveness Enhancing Principles

From the perspective of the emerging ‘patterns of aliveness’ theory, both case examples represent attempts to shift dysfunctional patterns of interaction into more functional patterns. Both had to build a very diverse and complex collaboration system across sectors or stakeholder groups based on an issue of common concern, with the aim of changing the status quo for the better. The envisaged change benefitted all actors involved, improved the situation for actors who were not involved, and contributed to the Sustainable Development Goals. The two examples differed in issue, level, size and impact, and had different starting points. Both initiatives were far from perfect. They struggled with hurdles, had to overcome severe conflict or deadlocks, and were not at all harmonious. But both succeeded in co-creating a more alive future with more possibilities for all actors involved. This suggests that the building of functional collaboration systems as an important lever in leading transformative change collectively can, with high quality process designs, invigorate human competencies for more functional co-creation and contribute to the emergence of ‘patterns of aliveness’. The examples show that when these competencies are invigorated, more and

more actors take up the responsibility to shape the future collectively in dialogue and collaboration. Using these case examples, the next section describes such transformative processes as patterned, relational interactions between the underlying aliveness enhancing principles. The analysis highlights how carefully stewarded processes invigorate human competencies that lead to 'aliveness' in the sense of better functioning human as well as socio-ecological interaction systems.

The coffee initiative began with a small group of actors from different sectors who had a vague vision for a change far beyond their control. This vision was a learning insight generated through reflection on previous projects with limited impact. The committed group of cross-sector actors became the starting point for growing a community of change agents, and building an issue-based transformation system with global impact. The initial group became a fractal of a more functional interaction pattern between the different sectors. They drew more and more actors into the process and stabilized the change endeavor by creating governance structures that ensured transparent and reliable progress. This served as an attractor for shifting multiple actors in the dysfunctional global coffee supply chain to rethink their patterns of behavior. Despite initial skepticism, it began to shift them into patterns of interaction that would become more functional for all supply chain actors, from small scale producers to consumer.

In combination with other sustainability initiatives in the coffee sector, this began to reverse a negative path dependency. The deteriorating living conditions of small coffee farmers became a matter of reputational and economic risk for more and more coffee roasters and companies. Afraid of being attacked by NGOs campaigning, who disclosed unethical sourcing practices, and in need of a continuous supply of high quality coffee, they became more and more interested in solving the problems together with other stakeholders. A growing community of pioneers became a catalyst for changed patterns of interaction within the different stakeholder groups. The private sector companies engaged more companies in changing their sourcing strategies towards sustainable coffee. Within companies, involving managers in the initiative led to rethinking business strategies towards corporate sustainability. Participation in the coffee initiative became a catalyst for a number of companies to revisit and revamp their overall company strategy and to engage in sustainable sourcing for other commodities as well.

Viewed through the lens of the organizing principles, the process throughout the five development phases of the initiative showed a constant flexible enactment of these six principles. The coffee initiative started with the **intentional generativity** of a committed core group. Though still vague and unable to anticipate all the developments towards to global coffee platform in the beginning, this group acted upon an intention to create a better future for the entire coffee value chain, and especially conditions for coffee farmers. By involving multiple actors, including all relevant stakeholders of the coffee value chain, they took a transformative approach. It meant to consider the larger change system of actors that needed to be brought together. The approach reflects the principle of **mutually enhancing wholeness**. Following the principle of **contextual interconnectedness**, they engaged with actors concerned with making the global supply chain of coffee more sustainable and gradually build a community of change agents.

It is important to note, though, that this community was not limited to like-minded people, or what the social media realm would call followers of a movement. Instead, they deliberately included critics and difficult stakeholders. Parties with very different interests, in particular international NGOs and the coffee industry sat together at the table and worked through their mistrust and differences. This made progress more difficult but results far better. It helped enact the principle of **emerging novelty**, as the difficult dialogue between stakeholders opened up novel solutions such as a voluntary standard that was less focused on compliance and more on engaging the coffee community for continuous improvement.

The secretariat's management of the dialogue and collaboration process ensured a trust-building and safe level of **permeable containment**. This was achieved through transparent decision-making and reliable planning processes, and furthered by helping the stakeholder group develop rules of participation that marked the boundaries of the collaboration system. It included a way to manage collaboration and exchange with institutional actors that were not part of the closer collaboration system. A common identity around the intended change developed without losing sight of the larger system of stakeholders.

Collective reflection on process and outcomes took place throughout the initiative to help enact the principle of **proprioceptive consciousness**. This was most obvious in the regular stakeholder and steering committee meetings, which encouraged reviews and process evaluation. It was also evident in the way the project secretariat kept in touch through informal conversations with key stakeholders and with important external actors in the field of coffee production and trading. The secretariat constantly took the pulse of the internal and external context. The initiative's global outreach and the dissemination and decentralization of ownership and membership in the implementation phase strengthened the principle of **mutually enhancing wholeness**. As the initiative proceeded and more members were engaged, the transformation system became more complex. Rules of engagement helped keep the containment, yet locally owned initiatives could adapt strategies to local conditions. The merger of the 4C Association with the Global Coffee Program and the transformation of the initiative into the Global Coffee Platform emerged logically to enhance impact and reach and make a greater contribution to the transformation of subsystems in the coffee chain (such as small and large coffee production systems) and the global supply chain of coffee.

The water scarcity challenge in Tunisia, on the other hand, would have failed, if anybody had forced the conflicting actors into a joint conversation or vision development right from the start. First, each stakeholder's perspective on the issue had to be carefully acknowledged in separate dialogue settings. Trust in the capability of both stakeholder groups – the farmers and the government officials - to shape the future had to be established, and both groups also had to develop a minimum degree of trust for each other. Only then could the actual collaboration, which aimed at creating new and more functional patterns of overall interaction, begin.

The initial dialogue meetings within each stakeholder group functioned as small, but growing fractals of new patterns of interaction. The farmers were not used to exchanging their differing views on the water crisis with each other, and government official were not used to discussing the water challenge across departments. A shift of interaction patterns within

stakeholder groups preceded the shift in the overall pattern of interaction between stakeholder groups. A new form of reliable interaction, the organization of dispersed farmers into a network of representatives, empowered farmers to develop a joint stance and direction, despite the internal differences within the stakeholder group.

The context of the growing collaboration process was local, but not less complex than the global coffee initiative. On the contrary, the setting of the water conflict in a province facing many social and economic challenges, in particular growing violence and radicalization, created an extremely difficult context for a successful approach. The long-term challenges of water scarcity and the challenging political context will both persist. No multi-stakeholder initiative can reverse climate change or change the national political context. This initiative can, though, become a catalyst for other regions to try similar approaches and for this region to apply the approach to other issues or problems. The successful establishment of the water forum in the province of Kairouan is just a tiny step in a larger transformation. It is a stepping-stone in acquiring the societal resilience needed to navigate system change in complex challenges.

The process through the two development phases of this collaboration demonstrates the organizing principles in action. The Tunisian water collaboration process started with research, context understanding, and listening to stakeholder concerns. Unlike ordinary research, the results were not taken out of the system and written up in reports, used to mirror the findings back to the stakeholders. This enabled two different stakeholder groups to understand themselves and the situation better. Thus, the process of pattern shifting started with invigorating the principles of **proprioceptive consciousness** and **contextual interconnectedness**. The dialogue within the stakeholder groups acknowledged different perspectives, which, in turn, helped actors see how their situation was embedded in an intractable, wicked circuit of problem within a larger picture – a glimpse into **mutually enhancing wholeness**.

Process management ensured a good containment by ensuring that stakeholders first grew trust within their own stakeholder groups. This helped enact the principle of **permeable containment**, because it was clear to all actors throughout the process that parallel dialogues were taking place with farmers only and with government officials only. This opened the space for actors to slowly build an identity not only around their own stakeholder role and concerns, but also around the larger issue of water scarcity and the possibility of jointly working towards a solution. The careful design of an increasing interchange between the two groups shifted the **contextual interconnectedness** to the next level, creating a collaboration system involving all relevant stakeholders around integrated water resource management in the province.

This also invigorated the principle of **intentional generativity**. With increasing trust in their capability and in each other, collaborators could develop a joint vision for the future. A spirit of collective responsibility began to take root, paired with the pragmatic interest to jointly work on concrete issues to be solved. The thematic working groups, such as the group that worked on a water charter for the region, paved the way for innovation in the form of future water governance as well as in the how to plan future adjustments to the scarcity of water.

This touched the principle of **emerging novelty**.

The actual event, the water forum with 300 participating stakeholders, enacted the principles of **mutually enhancing wholeness** and **contextual interconnectedness**. It showed that a constructive negotiation between actors at all levels, from farmers to the national government, was possible. It helped them experience practical and constructive ways of negotiating between the interests of the individual and the interests of the whole. This glimpse into a different future that stakeholders would be able to co-create touched people so deeply that the water forum establishment turned into a quite emotional event. The realization that it was possible to shift from being violently deadlocked to shaping the future collectively was a deeply moving experience.

One of the most apparent human competencies that foster a sense of aliveness is the emergence of trust. Although trust seems a very individualized experience, it may actually have great relevance for human interaction patterns in societies, or even in the global society. Horx (2003) suggests that trust reduces what he calls the 'transaction costs' of societies. Transaction costs refer to the amount of control and societal investment into stability required for the society to function. Mistrust exponentially increases transaction costs, whether it is caused by crime, societal disparities, or bad governance. In the context of the emerging 'pattern of aliveness' theory advanced in this research, mistrust is an indication of deteriorating 'patterns of aliveness', while trust is an indication of a certain degree of aliveness in individuals and communities. Given the urgency of globally transformative change, trust may seem an unimportant side issue, but it is suggested here that paying attention to trust as an indicator of functioning human interaction systems is important for leading transformative change. In both case examples, mistrust was a pertinent issue that required careful process designs. Process management needed to foster trust building as a prerequisite for the transformative change of interaction systems. **Understanding the choreography of trust building is therefore important for leading transformative change collectively.**

Leading transformative change never takes place in isolation; it is always a collective endeavor in patterned interaction. The actors who steward the change and those involved in acting differently must shift from a self-centered consciousness to an awareness of the larger issues at stake. This shift paves the way for sustainability in the way this collective endeavor takes place and in the contribution of stakeholders to the world-making in their particular context (Maynard and Mehrtens, 1996). As the case examples show, in the beginning of a multi-stakeholder process actors arrive with a considerable pattern of mistrust based on their previous experiences. In the water case, farmers had enormous mistrust towards the government and vice versa. In the coffee case, the international NGOs constantly watched the behavior of the large companies involved, and the producers did not trust anybody.

Rockström et al. (2009) suggests that a shift toward greater concern for the larger whole of the planet Earth is not simply a moral obligation, but a requirement for sustainability. Francesco Varela et al. (1992) agree, saying: "[...] planetary building requires the embodiment of concern for the other with whom we enact the world" (p. 247). Yet the ordinary actors in a coffee supply chain or in a Tunisian province may not be able to stretch

to see the planet as a whole and their contribution to its survival. They can only shift their minds to encompass the next level whole. A concern for the other emerged as a capacity of all actors in both case examples. In the coffee project, all actors gained a better understanding of the vicious cycles in the supply chain that led to exploitation and poverty particularly for small coffee farmers. Gradually, through the designed joint learning process around the development of a mainstream standard, all actors gained a deeper understanding of the dysfunctional patterns of interaction and empathy for the view on the issue of different stakeholders. Corporations that had perceived the NGOs as fierce enemies that could launch a campaign against them at any time began to not only acknowledge their expertise, but also understand their concerns. NGOs that had nurtured their mistrust of corporations over decades began to trust them as they saw their managers' concern and engagement and after companies agreed to make a substantial contribution to the capacity building of small farmers.

In the water project, the mistrust was so severe that, at the beginning, the different stakeholders needed to meet separately. They needed to build trust within their stakeholder groups first and gain a common understanding of the water issue. The fact that the farmers knew that the other stakeholder group, the government departments, also met in preparation of a future joint meeting, established trust. **Trust, in transformative change, can emerge as a result of collective sense-making, and becomes the prerequisite for constructive collective co-creation. It emerges not through superficial harmony, but in a space that is grounded in respect for difference.** This requires awareness (enacting the principle of **proprioceptive consciousness**) of a deeper space of coherence that lies beneath the different perspectives (Isaacs, 1999). This 'inner posture', is more than just an attitude. It is a process of appreciating the dignity of another person, and is suggested here as an important ingredient for leading or stewarding transformative change collectively. Difference assumes a new meaning as the intelligent expression of needed diversity. Respecting difference builds trust. It has the potential to unleash a dynamic of responsiveness to the needs of others and the next level larger systems as well as the willingness to contribute. It reduces the need to focus only on one's own particular interests.

Leading transformative change needs to foster trust building. It needs to create a safe space (Tennyson, 2011) for collective sense-making, in which the joint diagnosis of reality shifts of actors away from defense and self-protection and towards the potential to collaboratively act upon an issue of common concern. Processes of collective sense-making and collective co-creation, as explained by Kenneth Gergen (2015), are never solely objective. Instead, they are riddled with many interpretations of socially constructed worlds. Actors who aspire to individually or collectively lead transformative change need to be aware of their socially constructed view of the world, and create dialogic spaces in which the variety of socially constructed realities can be explored. Only this process can lead to the trust that is a prerequisite for discovering 'patterns of aliveness' and shifting dysfunctional patterns into more functional ones. Trust in societal development fosters aliveness and reduces fear (Fukuyama, 1995).

As the two case examples show, transformative process designs can support the development of trust. With growing awareness of how all actors are embedded in negative

path dependencies, the necessity for self-protection diminishes and the willingness to contribute increases. The ability to become responsive to what a situation needs also increases (Scharmer, 2007), along with the willingness to contribute, and to encounter difference without building walls, defending identity, or imposing convictions. Trust engenders a feeling of interconnectedness and collective responsibility, and leads to collective action, with less need to fight for one's own territory. More time can be used to find and foster the collective intention, the underlying coherence, the solution, and the shared space of significance.

Both examples show how transformative change among multiple actors with an effect at scale can be iteratively designed, facilitated, and organized. They demonstrate how change can gather positive momentum if process design helps to invigorate the human competencies to shift into more functional interaction patterns. In both case examples, the transformative change was designed and facilitated by backbone support, but ultimately led by multiple actors.

6.4 Conclusions: Functional Collaboration Systems as 'Patterns of Aliveness'

This chapter has argued that **translating the conceptual framework of the emerging 'pattern of aliveness' theory into multi-stakeholder process designs opens new pathways to conceptualizing transformation towards sustainability not as creating restrictions and constraints, but as invigorating the human potential to shape better futures collectively.** The two case examples showed how navigating transformative change required attention to how actors from different stakeholder groups become joint drivers for change while acknowledging their differences, overcoming internal and external conflicts, and keeping the purpose of the initiative high on the agenda. In both examples, it is difficult to trace who actually initiated or led the change. Both produced profound changes, yet no leader in the traditional sense could be identified.

The transformations in these cases happened because actors grew into a functional **collaboration system**, and this collective then transformed the situation. Leadership by many actors was profoundly present, but could not be attributed to one or a few individuals. In their article on system leadership, Senge et al. (2015) suggest that systems leaders foster collective leadership by "creating the conditions that can produce change and that can eventually cause change to be self-sustaining" (p. 29). This chapter argued that stewarding 'patterns of aliveness' is a key competency that can be developed not only by actors who provide backbone support, but also by many actors across stakeholder collaboration systems. Contributing to functional human interaction for socio-ecological systems is less a skill to be acquired than a human competency to be unearthed and lived. If multi-stakeholder collaboration were stewarded with the notion of aliveness as an inherent feature and urge of all life, it could help a variety of **actors in transformative change endeavors become partners of evolutionary processes by taking the underlying aliveness enhancing principles into consideration and paying attention to their patterned interaction.**

This chapter showed how the human competency dimensions of the practice model are anchored in the aliveness enhancing six organizing principles. It used the practice model and the organizing principles as a lens to understand how to build functional collaboration systems in multi-actor settings. It showed how the patterned occurrence of 'human competencies in interaction' mirrored the patterned occurrence of the aliveness enhancing organizing principles. The chapter argued that collaboration is more effective when it enhances the sense of aliveness of individuals and the 'patterns of aliveness' within a system of actors.

Today, navigating complex transformative change in multi-actor settings is becoming the day-to-day business of many actors in cross-sector initiatives addressing sustainability challenges. Poor process designs, however, can cause the most well-intended collaboration initiatives go astray. In the previously mentioned interviews with 30 actors engaged in multi-stakeholder sustainability initiatives (see Chapter 1), more than 80% attributed failure to the human factor, not to the wrong goal (Kuenkel and Schaefer, 2013). Knowledge of the essential ingredients for successful **transformative process design** is key. Approaches, methodologies, and tools that help access the human competencies to design and implement functional patterns of interaction are essential.

In the case examples, the Collective Leadership Compass was used as a lens and meta-level guiding tool to assess, plan, and iteratively evaluate stakeholder processes that aimed at addressing complex and intractable challenges. **The practice model was not a substitute for existing change management tools, but a way of integrating tools and approaches into an overall meta-level guiding structure.** The compass functioned as a continuous quality check on the collaboration. When challenges arose and collaboration efforts became difficult, the compass helped focus attention on what was going wrong. **The attention to the different dimensions and to the principles behind the dimensions helped invigorate the capacity of a collective of actors to lead the change collectively, each of them according to their skills, expertise and experiences.**

Shifting dysfunctional patterns of human interaction into more constructive and future-oriented collective interaction patterns of increasing aliveness often requires catalysts. These could be backbone organizations or a core group of key stakeholders who become a fractal of the enlivenment capacity of a collective to steward such transformative change. But **success and impact ultimately hinge on a broad range of actors to organize themselves to steward transformative change.** This can only work if each of these actors individually connects with a perceived future pattern of aliveness and contributes to shifting a system's dysfunctionality towards a more functional pattern of interaction. Individuals must be emotionally engaged with a future that can be shaped collectively and with the larger purpose of the transformation. **Conceptualizing and leading transformative change collectively needs to encourage the integration of the rational and the emotional, the intuitive with the facts and figures, the subjective and the objective, and the individual and the collective.**

A good place to start would be to investigate how the increasingly common phenomenon of multi-stakeholder partnerships and collaboration might further this integration. Complex

cross-sector and multi-actor settings already attempt to address complexity with a complex approach. This pays tribute to the interdependence of implementation issues around sustainability. **Multi-stakeholder collaboration initiatives are, in this sense, a laboratory for collectively stewarding 'patterns of aliveness'**. The factors in their success (or failure) could be studied to better understand how to shift dysfunctional interaction patterns toward more functional ones that safeguard aliveness in socio-ecological systems. The practice model has been presented as one possible methodology, which functions as meta-level guidance in translating the non-linear world of enhancing aliveness patterns into tangible action that can be planned, monitored and evaluated. It helps develop transformative process design that more likely achieve envisaged results by encouraging attention to the six dimensions and their underlying principles. The following chapter explores how the practice model could be further developed into a meta-level conceptual architecture for transformative systems change involving multiple actors.

Chapter 7:

7 A Conceptual Architecture for Leading Transformation in Large Systems

Integrating theory and practice

Developing a conceptual architecture for stewarding co-evolutionary transformative change

Chapter 7 takes the insights about the need for stewarding ‘patterns of aliveness’ in functional collaboration systems from practice in complex multi-stakeholder settings into the realm of large systems change. It argues that translating the aliveness enhancing organizing principles into approaches to planning and evaluating complex large systems change can greatly enhance the effectiveness of intervention designs and collaborative initiatives for transformation to sustainability. In that way, the chapter addresses the fourth research-sub-question:

IV How could the integration of the living systems features, the experiences from complex multi-stakeholder collaboration and the evaluation of narrative interviews with transformation leaders complement the practice model and be further developed into a conceptual architecture for leading transformative change collectively at scale in global transformation projects with multiple actors?

Chapter 7 suggests four shifts in thinking toward a new way of approaching large systems transformation that takes into account the organizing principles. It summarizes the insights from 50 semi-structured research inquiry conversations with scholars and practitioners in the global sustainability arena. These research conversation partners were chosen on the basis of their engagement with overcoming global sustainability challenges. The inquiry conversations partly employed a structured interview design, but also took place as explorative conversations during conferences and gatherings. This chapter uses insights from these research conversations and recent scholarly literature to describe important, yet often insufficiently linked intervention approaches to sustainability transformation. Using the emerging ‘pattern of aliveness’ theory developed in Chapter 5, Chapter 7 suggests a way of integrating these approaches with the life-enhancing principles and the practice model to generate an overarching conceptual architecture. It shows how stewarding co-evolutionary ‘patterns of aliveness’ might be designed in transformative ways in large systems change. This is illustrated using an example of large system change – Finland’s roadmap to a circular economy. The chapter concludes that an overarching conceptual architecture for leading transformative change could potentially support multiple actors in collectively developing more effective process designs for large systems change.

The previous chapters advanced the idea that collectively leading transformative change for sustainability requires a profound **shift in mindset. It means seeing the world as patterned reality in nested collaboration systems with continuously negotiated**

aspirations of aliveness. Chapter 6 used two case examples to show how to operationalize this view in complex multi-stakeholder collaborations. This dissertation argues that in order for the SDGs to fulfill their function for transforming the world and change the way the social construction of collective world-making takes place, they need to bring about 'patterns of aliveness', life-enhancement, or 'enlivenment' (Weber, 2013). However, the large scale of change called for by the SDGs makes this a complex process fraught with wicked problems, or dysfunctional patterns reducing or preventing aliveness. Multiple initiatives at different levels, with different actors are required to effect transformative change that enhances 'patterns of aliveness', almost like islands that connect and converge, and subsequently strengthen each other. Alexander (2005) captures this idea when he says:

The key difference between the patterns that arose in the 20th century profit-oriented system and those, which must accompany a living process, is that in a living process the patterns define types of centers, which reinforce, support, bring out the life of the whole. For a society to have living processes, attention to the whole must once again become the framework, so that the system of patterns, which are used as support for the living process, acts together to take care of the whole. Only this will make the living whole a possible outcome. The crux of the whole thing is that we seek patterns that are *good*, patterns, which will generate life when we create them (p. 346).

This dissertation suggests that **leading transformative change for sustainability collectively, if conceptualized as stewarding co-evolutionary patterns of aliveness, needs to be supported by frameworks and methodologies that enable actors to identify, choose, and further patterns that are 'good' in the above sense.** In their underlying intention, the SDGs follow the principles of **intentional generativity** and **mutually enhancing wholeness**. However, many change initiatives still compete with or ignore each other, and as a result actions and initiatives are often duplicated. For sustainability transformation through implementation of the 17 SDGs to become more effective, change initiatives must identify their role within a larger change system, consciously operate in a distributed networked action mode, create synergistic connections across different change initiatives, and stay aware of the movement and effectiveness of the overall large-scale change system as represented by the SDGs.

Building a vital collaboration system of multiple transformation initiatives around SDG implementation has been termed **transformation system** in this research. This kind of transformation requires creating an emotionally compelling and strategically visible link between different initiatives at local, national, and global levels. In other words, it must be possible to connect with the larger story and see oneself contextually contributing. This does not mean that all efforts need to be administratively coordinated. It does mean helping actors see the larger pattern and how they are part of a story much bigger than their individual initiative. It means creating opportunities for change and spaces where collaboration systems can have structured conversations with each other.

Such forms of collective sense-making (Snowden and Boone, 2007) and collective co-creation approaches (Kuenkel, 2016) need to empower large numbers of people to recognize patterned realities and make sense of them as a basis for action towards patterns of

increasing aliveness. Continuously operating feedback loops can provide iterative learning, and inspire all actors to feel responsive and responsible to foster patterns of aliveness. **This new views of change initiatives can further a culture of partnering with life and evolutionary processes. The challenge is to create a sufficiently conscious and explicit co-creation process in human interaction systems as well as socio-ecological systems so that this can happen in a more fruitful and constructive way.** Approaches to more powerful co-creation can revive and invigorate the essentially human longing to contribute to an envisaged collective impact (Hanleybrown et al., 2012; Kuenkel, 2016; Senge et al., 2015). They must also be applicable at all levels of systemic change. At the core of such a new conception of leading transformative change collectively is the human capacity to dialogue and transform differences into evolutionary progress. Ideally, self-centered views would be transcended, setting the stage for successfully addressing the challenges of globalization and sustainability (Kuenkel, 2008).

The *first* section of this chapter suggests that perceptions of approaching change must be shifted for actors in the sustainability domain to become more conscious partners of evolution in leading transformative change collectively. The **shifts in mindset** suggested rise from the pattern approach discussed earlier. They describe a new way of approaching large systems transformation that takes into account the principles of life-enhancing patterns. They imply certain requirements for the conceptual architecture elaborated later.

The *second* section suggests drivers for sustainability transformations derived from the evaluation of 50 research inquiry conversations with global transformation leaders. Using the patterns of aliveness proposition as a filter, it suggests how these drivers might be linked to currently insufficiently integrated academic discourses on intervention approaches to sustainability transformation. The section argues that each of these drivers enables transformation to sustainability, if considered as one particular part of an overall picture.

The *third* section suggests a conceptual architecture that integrates these intervention approaches with enablers of sustainability transformation in relation to the life-enhancing principles and the dimensions of the practice model. The conceptual architecture aims at showing how using the 'patterns of aliveness' approach could support **transformative design** of interventions for large systems change, which need to be led collectively by multiple actors. The conceptual architecture is illustrated by an assessment of the intervention design of a selected large-scale transformation initiative: the roadmap to a Circular Economy in Finland.

7.1 Mind-shifts Towards Leading Transformative Change Collectively

The previous chapter discussed how multi-stakeholder collaboration initiatives across institutional, sector, and national boundaries offer a laboratory for the application of patterned approaches to large systems change. Based on conceptual deep dives and practice exploration presented already, this chapter suggests that the implementation of the 17 Sustainable Development Goals can be seen as a global laboratory for leading

transformative change collectively. It argues that in order to steward those towards more functional patterns of socio-ecological interaction, four shifts in the approach to leading large-scale transformative change for sustainability are required.

- From fixing wicked problems to **shifting dysfunctional patterns** towards co-creating more functional socio-ecological interaction patterns.
- From aspiring to reach a goal defined as a stable state to **taking goals as transformation guidance** while aspiring to achieve the collective capacity to recognize, co-create and maintain functional patterns of socio-ecological interaction patterns.
- From taking an isolated project approach to collectively **stewarding patterned and nested change initiatives in transformation systems** that foster their interconnectedness and their relation to the global common good.
- From emphasizing the deficits of human actors to **nurturing competencies and functional interaction patterns that already exist** (including disruptive innovation), as well as building the capacities of collectives of actors to lead transformative change.

These four shifts in perspective will be elaborated in more detail.

7.1.1 Co-Creating Functional Interaction Patterns

The literature on transformation challenges is riddled with terms like wicked problems, complex challenges, problem solving and solution finding (Bäck and Levay, 2015; Termeer, Dewulf, Breeman and Stiller, 2013; WBGU, 2011a; WBGU, 2011b; Vermaak, 2011). This terminology suggests that one of the most important leadership tasks is problem solving or solution finding. This may be appropriate for some challenges (Snowden and Boone, 2007; Boone and Hendricks, 2009), but it may be flawed in the context of the complex interdependent and urgent challenges of global development in the context of the SDGs. As a result, an increasing body of literature on sustainability transformation suggests the need to collectively diagnose imbalanced interaction patterns and how they lead to these wicked problems (Waddell et al., 2015; Folke et al., 2010). The practice of a joint diagnosis of the current reality heightens awareness of dysfunctional patterns among various actors in human systems. Such awareness in turn strengthens the capability to actively engage in shifting behavior towards more functional patterns of interaction between people and also between human interaction systems and the natural environment (Grimm et al., 2000). Hence, 'solved problems' should really be viewed as collectively-identified temporary solutions. Regularly evaluating their contribution to a more functional overall long-term pattern of aliveness is key. Interaction patterns need to be changed again when they no longer serve their purpose, enhance the aliveness of a subsystem or the overall system, or fit complex and newly evolving challenges (Kuenkel and Schaefer, 2013; Kuenkel, 2016).

Collective leadership in sustainability transformation cannot only focus on the immediate next level solution, but must also **strengthen the collective ability to co-create functional patterns of socio-ecological interaction. This includes finding temporary solutions, evaluating whether they contribute to more functional patterns, and dropping them in**

favor of new solutions if they no longer serve the purpose. Pattern cognition, collective sense-making (Snowden and Boone, 2007; Snowden, 2015), and collective co-creation methodologies (Kuenkel, 2016; Scharmer and Kaeufer, 2013) need to become standard competencies for leading transformative change collectively. Hence, **the first shift in thinking about leading transformative change is to replace a narrow solution focus with a focus on how collectives acquire an adaptive learning capacity to continuously steward patterns into functionality.** A conceptual architecture that aims at strengthening collectives of actors to lead transformative change needs to build the capacity of all actors to jointly diagnose the current reality. Moreover, it needs to support co-creative and adaptive ways of planning collaborative change that will shift dysfunctional patterns into aliveness enhancing socio-ecological interactions.

7.1.2 Taking Goals as Transformation Guidance

Redirecting attention from overcoming problems to shifting malfunctioning patterns of interaction changes the role goals play in leading. Given the current state of the world, the human agency behind leading transformative change can no longer be disconnected from the larger goal of a healthy planet and humanity. This connection is important, but overall sustainability goals tend to remain vague if they are not operationalized into detailed targets. At the same time, it seems important in complex adaptive systems that the goal is not defined as a stable state or a fixed target to be reached (Lichtenstein et al., 2007). Goals must be seen as contextually transformative guidance for a range of targets where interconnections, interdependencies, and impact are continuously crosschecked. **Leading transformative change increasingly means to further such a range of targets among a variety of actors, yet support self-organization and self-efficacy in decentralized or distributed collective action initiatives.**

This comes very close to describing the interaction processes that took place in the case examples. Goals as transformation guidance include agreements on behavioral principles, voluntary standards for managing certain issues, and agreed meta-level goals that allow a variety of different implementation pathways (Burke, Wilson and Salas, 2005; Guth and MacMillan, 1986). In this context, goals can be seen as agreed-upon descriptions of future functional patterns of interaction. Success comes not only through reaching a fixed goal or a result as a stable state, but by **taking goals as temporary guidance for iteratively approximating better functioning patterns of socio-ecological interaction.** This process can take advantage of humankind's increasing ability to maintain balance and collectively discover mal-functions sooner. **It calls for a broad empowerment of people at all levels to become aware how and when patterns need to shift.**

The 17 Sustainability Developmental Goals can provide this kind of contextual guidance, with the need to continuously crosscheck interconnections, interdependencies and impacts (Niestroy and Meuleman, 2015). Taking goals as temporary guidance rather than fixed targets reduces **the fixation on one particular solution, metric or target, and instead acknowledges various transformative approaches, temporary solutions, metrics and targets in their interconnected impact towards a larger goal.** A conceptual architecture

that aims at strengthening a collective to lead transformative change needs to support actors in seeing connections between multiple approaches and evaluating their effectiveness in relation to a larger goal as transformation guidance.

7.1.3 Stewarding Change in Transformation Systems

The focus of leading transformative change is most often on the specific project, program, or organizational mission and not explicitly on contributing to a larger transformation system. Planning documents may require specifying what others are doing in the same field, but are rarely serious about the fact that a planned project may only become successful, if it takes into account its complex network of interdependencies with other interventions. Complex change systems with various interventions and initiatives may be successful as a whole even if the individual change project fails, or they might fail as a whole, even if isolated projects are evaluated as successful. **Looking at complex change as nested and mutually consistent transformation systems has a hugely empowering effect for multiple actors.** Waddell reports that actors in the renewable energy field started to create new connections and collaborations as soon as they realized that they were all part of a larger change system (Waddell, 2016a). Too many purported change initiatives take a pilot-, initiative-, single-sector, or single institution-based approach, with little regard for the fact that the issue at hand is deeply embedded and nested in other related and semi-related issues, is dynamic and ever evolving, and is linked to a context of multiple social, political, economic, and institutional systems. Any single project-based initiative is not likely to get very far without taking a systemic approach that recognizes and works with these interlinked and networked attributes of complexity.

In a complex system, with multiple actors in diverse places and institutions who have varying interests and capabilities, recognizing the nested nature of issues and institutions means recognizing that no one initiative or project can 'solve' a problem because of its very embeddedness. Multiple contributions, all directionally aligned with a goal as transformation guidance, are the pathway to better functioning, more vital systems. Small incremental change is as important as accelerating or aggregating it to systems change (Hinrichs and Kangas, 2003). The third shift in conceptualizing leading transformative change collectively is therefore to move from taking an isolated project-based approach to **stewarding multiple systemic, patterned, and nested change initiatives in interconnectedness and relationship to a larger transformation system.** A conceptual architecture that aims at strengthening a collective to steward transformative change needs to support actors in identifying their preferred approach and transformative intervention design in the context of a larger transformation system. It needs to help actors see the links between different intervention approaches. It also needs to spur ways of measuring progress that encourage monitoring of set targets within the context of a larger transformation system.

7.1.4 Building Transformation Initiatives on Human Competencies

The preceding account of sustainability transformation suggests that the human

competencies to shift towards more functioning patterns of social and socio-ecological interaction are already available in principle. However, collective action for sustainability is still fragmented and operates in niche areas. A fourth shift is required in the way leading transformative change collectively is conceptualized: **From emphasizing deficits of people to nurturing (e.g. through supporting self-empowerment and self-organization) and connecting the functional patterns that already exist (including disruptive innovation).** This forms a practical basis for building the capacities of a collective of actors to lead transformative change. The case examples showed how this can happen at a small scale. While diagnosing malfunctioning patterns of interaction, one inevitably also finds patterns that work, even if they are nearly invisible, do not get attention, or are barely stabilizing an otherwise collapsing system. Looking for existing abilities, stewarding such existing functional patterns into an emerging pattern shift, or as Burns puts it ‘nurturing emerging development’ (Burns, 2015) are as important as spotting disruptive ways of shifting stuck patterns (Finidori, 2015, 2016; Goepel, 2016).

Nurturing existing and emerging competencies means looking at existing abilities, resources, and capacities as patterns of competencies (Sternin and Choo, 2000; Porter and Kramer, 2011). **Connecting ‘patterns that work’ with each other through practice exchange may help actors to collectively steward existing patterns into an emerging pattern shift that builds on what already works.** This requires asking the right questions and navigating progress collaboratively and co-evolutionarily in multi-actor settings. It means empowering actors (or allowing them to empower themselves) to build on existing competencies to design and enact a better future together, rather than imposing change from outside. Nurturing the collective innovation capacity of human systems requires a broad empowerment of people, at all levels of society, so that many more actors become aware of how and when patterns need to shift. The fourth shift in conceptualizing leading transformative change collectively is **to more explicitly identify, explore, and develop ‘patterns that work’ for transformation to sustainability and to nurture existing competencies.** A conceptual architecture that aims at supporting actors to lead transformative change needs to help identify existing competencies and functional patterns that work. Table 14 summarizes the shifts in mindset suggested.

Table 14: The shifts in mindset needed (Copyright by the author)

Mindset shifts	From	To
Co-creating functional socio-ecological interaction patterns	Fixing wicked problems, mitigating risks and combatting challenges.	Collectively diagnosing imbalanced or dysfunctional patterns and safe-guarding or co-creating multiple pathways ways to shift patterns into aliveness.
Taking goals as transformative guidance	Aspiring to reach targets defined as measurable stable future state or static target.	Taking goals as temporarily binding guidance for achieving a dynamic balance in better functioning patterns while using metrics to continuously learn how to further improve patterns.
Stewarding interconnected change initiatives in transformation systems	Taking an often-isolated project-based or initiative-based approach.	Stewarding systemic, patterned, and nested change initiatives by fostering interconnectedness and connection to a larger transformation system.
Building transformation initiatives on emerging potential and existing competencies	Emphasizing and focusing on the deficits in a system.	Recognizing what already works, building on existing and emerging competencies, empowering functional patterns and fostering disruptive innovation.

If the emerging 'pattern of aliveness' theory with the six organizing principles became a new frame of reference for large systems change, actors would inevitably ask different questions, focus attention on different issues, and interpret change results differently. This requires a review of approaches to sustainability transformation. It invites new perspectives on how societal and global transformation is designed in 'patterns that work', as well as how progress of functional socio-ecological interaction is measured. Based on research inquiry conversations with 50 scholars and practitioners in the global sustainability arena, the following section identifies recurring themes and suggests to cluster them into six 'drivers' that enable approaches, or contribute 'patterns that work', to sustainability transformation.

7.2 Enablers of Sustainability Transformation

A paradigm shift towards seeing reality as an interconnected whole, and the emerging 'patterns of aliveness' theory as the foundation for collectively leading transformative change informs the four above-elaborated shifts in thinking about transformative change. Current standard procedures, rules, metrics, and systems for monitoring and evaluation for SDG implementation must also be reviewed to invite new perspectives. **Over time, success and impact could be redefined as the contribution of a given action, plan, complex cooperation project, or strategy to shifting dysfunctional patterns into 'patterns of aliveness'**. This would change the perspective from the current dominant discourse about preventing a planetary collapse (Dryzek, 2013; Hulme, 2008; Prádanos, 2016) to strengthening the possibility for **co-creating a world in which humankind partners with life and evolutionary processes in maintaining and expanding the conditions for life (including humans) to thrive**. Such a shift would also change the design of intervention strategies that aim at advancing sustainability transformation.

Science increasingly describes organizational change as non-linear, complex, dynamic, and unpredictable (Hilborn, 2000; Dooley, 1997). This view is especially applicable to cross-institutional societal and global change. Most planning and design instruments from public sector, private sector, civil society or research bodies, however, are linear and assume predictable, step-by-step change. However, the pattern of aliveness approach acknowledges that interacting and mutually influential organizing principles are not linear. This non-linearity may be mirrored in patterns of human behavior, and actors can become aware of this in their effect on socio-ecological systems. **Too few theories, approaches, tools, methodologies, and frameworks enable actors to look at the patterns of interaction between people, strategies, interventions, or metrics that underlie complex systemic challenges, and to see how these patterns enhance the quality of aliveness in living systems**. Even fewer consider existing or to-be-invigorated human competencies in interaction as a foundation for transformation to sustainability, as the practice model suggests.

The case examples illustrated above show that the aspiration to lead transformative change is a collective human competency that can be unearthed, invigorated, and enhanced even under adverse circumstances. Yet, human thinking and behavior is most often bound by

structures (mental, social, or physical) that can be conducive for transformative change or not. In an interview, author Humberto Maturana⁵⁶ suggests that people develop theories about the nature of reality, about each other, and about structures that hold a situational interaction in place. Lewin (1963) has termed these “Alltagstheorien” (translated as everyday-theories);⁵⁷ they are stories that convey partial and experience-derived theories of how the world works and subsequently how change comes about. Through the continuous social construction of such everyday-theories, certain narratives about how the world works get strengthened, while others are pushed into the background. Life experiences as well as recurrent information about how the world, a problem or a certain issue works are distilled and reconfirmed in a communicative narrative in a conversational community (Berger and Luckmann, 1991). Recalling the ‘Santiago Theory of Cognition’ discussed in Chapter 4, the social construction of reality reinforces future social constructions (Maturana and Varela, 1991). Yet, everyday-theories can change if new interpretations of reality take root, are communicated more frequently, and move into the social realm. Fig. 9 shows the reinforcing cycle of everyday-theories.

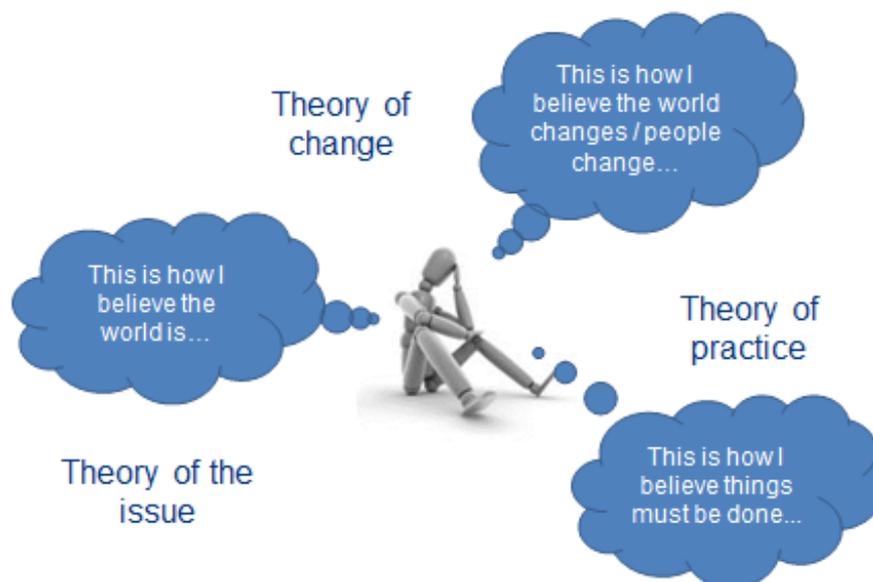


Figure 9: Implicit every-day-theories of change⁵⁸

Everyday-theories often unconsciously lead to conclusions about how change happens. They provide a narrative for how the future is best influenced, and therefore what needs to be done. Garrett and Isaacs (2001)⁵⁹ suggest that such everyday-theories remain largely unconscious or at least unchallenged within communities. Once people begin to converse with each other and see the situation differently, and especially when they enter into dialogue with those outside their community, who may have different implicit or explicit theories of

⁵⁶ Personal interview with Humberto Maturana, August 2016

⁵⁷ The term everyday-theory is taken from the German term ‘Alltagstheorie’ which describes a mental construction of how things are, hang together and have come into being which creates a basis for the actions of a person in the world (Lewin, 1963)

⁵⁸ Source: Collective Leadership Institute; copyright 2017 Collective Leadership Institute

⁵⁹ DIALogos Fieldguide „Leadership for Collective Intelligence“ Course, 2001

change, they are able to challenge and change their everyday-theories. This can lead to co-creating new and different mental, social, communicative, and physical structures that are more conducive to sustainability transformation.

The case example from Tunisia illustrated how organized dialogues enabled new communication structures to emerge that led actors to develop new 'everyday-theories' about how to collectively change the situation. Yet, even in the sustainability transformation discourse itself, scholars and practitioners build their recommendations for change on implicit theories of change. People feel most comfortable in a particular 'thought community', passionately advancing a *certain* approach to transformation. Most initiatives, strategies, and actions follow an implicit 'theory of change,' sometimes made explicit through a participatory planning process (Brest, 2010; Taplin, Clark, Collins and Colby, 2013). They assume that that individual, intergroup, and social/ systemic change will happen in a particular way, and that specific actions or interventions will produce positive results. Broadening, challenging, or even overthrowing implicit theories of change are often important for sustainability transformation (Henderson, 1995; 1997; Henderson, Locke, Liddy and Raevis, 2009). This often happens in communicative communities, among scholars and practitioners of global change. Yet transformation to sustainability requires more than invigorating co-creative collective intelligence processes through dialogue and collaboration. It needs to result in new governance structures, regulations, laws, innovations, or measurements that are better able to maintain, rehabilitate, or safeguard patterns of aliveness in socio-ecological systems. Such structures are not final solutions, but temporary solutions that require adjustments in iterative learning curves. Stewarding transformative change needs to enable actors to review, amend, and co-create conducive structures for patterns of aliveness to emerge.

The following discussion of the **design of transformative change at the scale** needed to achieve Agenda 2030 and see a long-term transformation toward sustainability are based on many research conversations along with written sources. A growing number of actors advance the discourse on how best to move sustainability transformation forward. These discussions take place in scholarly articles and other publications, but also during conferences, practitioner and research gatherings. It includes scholars, politicians, companies, social entrepreneurs, innovators and civil society actors. In the context of this dissertation, the author conducted 50 research inquiry conversations between 2015 and 2017 that included⁶⁰:

- Exploratory dialogic conversations on transformation issues during conferences with speakers or session leaders (10)
- Questions and answer sessions, or interactive plenary sessions with conference participants, where the author presented papers, gave session inputs, or presented a keynote speech (12)
- Exploratory, yet targeted conversations in small groups settings that aimed at

⁶⁰ A list of relevant gatherings attended by the author as well as the summary of research inquiry conversations held can be found in Annex 9.2

advancing the systemic approach to sustainability transformation (18)

- Individual research conversations in person or using communication technologies (10)

The conversations explored many issues following the flow and topic that was under discussion. They also touched three main topics that were relevant for this dissertation:

- Deliberation on approaches to sustainability transformation,
- Perceptions of drivers or enablers of transformation,
- Aspects and prospects for scaling or accelerating transformation.

The content of the conversations was documented in different ways: during most one-on-one conversations, the author took notes or taped the conversation, if this had been agreed, and later summarized the results in a table format. During the small group conversations, the author took notes and summarized the content afterwards. The same process applied to the question and answer sessions as well as the exploratory research conversations during conferences. Annex 9.2 shows a summary of the organizational affiliations and societal or cultural domain of the participants, and the major results from each regarding the above topics. The system view of life and the pattern approach advanced in this dissertation functioned as a lens for the analysis of the different themes. Depending on their expertise, experiences, and 'school of thought,' different conversation partners emphasized certain themes as more important than others. In the sense of the above-mentioned 'theories of change' and 'theories of practice', the results from the conversations showed a spectrum of answers that can be described as partial views on the possibilities to advance sustainability transformation.

Analysis of the three main themes (approaches, drivers and acceleration) resulted in the identification of six main content themes, which have been termed 'drivers' of sustainability transformation. These drivers are defined as important choices of intervention strategies that can be applied by multiple actors to enhance systemic and transformative change. Each of these drivers focuses on a particular approach to transformative change and looks at progress from a particular angle. Although most conversation partners emphasized more than one of these drivers, very few advocated for an integration of all. Table 15 summarizes the six drivers for sustainability transformation. The following section elaborates the main features of the drivers mentioned by research conversation partners.

Table 15: Overview of identified drivers for sustainability transformation
(Copyright by the author)

Drivers of transformation	Description	Issued mentioned during inquiry conversations
Narratives	Change in mindsets and paradigms that envision a sustainable future	<ul style="list-style-type: none"> • Overcoming the short-termism of politics and economic activities • Taking a long-term view of responsibility for a flourishing planet • Taking the role of economy back where it belongs: an activity in service if life • Developing visions of a livable future for all • Encourage strategic goals setting and monitoring of execution at societal, but also at organizational level • Overcoming the scarcity paradigm • Re-awakening solidarity and human abilities to take care of each other • Overcoming the neo-liberal paradigm of individualisms and competition • Showing pathways to responsible production and consumption • Embedding new narratives in educational institutions from pre-school to business schools and university • Challenging the current economic growth paradigm and developing alternatives
Metrics	Measurements systems that further sustainability transformation	<ul style="list-style-type: none"> • Overcoming the focus on 'wrong' or imbalanced metrics such as GDP • Further developing and operationalizing sustainability metrics • Utilizing disclosure of sustainability metrics with peer-group pressure to accelerate transformative behavior • Developing various forms of sustainability metrics, those that can be utilized by individuals, and those that can be scaled to global level • Further a thinking in feedback loops and balance • Making metrics accessible to many different actors • Developing global and local feedback systems or transformative action • Furthering mindfulness techniques
Regulations	Regulations and laws that safeguard social and environmental interests	<ul style="list-style-type: none"> • Advancing regulatory frameworks for sustainability at all levels • Creating laws, regulations, and binding standards • Advancing globally accepted agreements • Regulations for financial investment • Tax systems and incentives for sustainability transformation • Regulation for social equity promotion • Furthering voluntary standards and guidelines (from responsible supply chains to responsible investments) • Using peer group pressure, disclosure and reporting mechanisms to accelerate implementation • Advancing financial resource allocation mechanisms for transformation

Drivers of transformation	Description	Issued mentioned during inquiry conversations
Governance	Systems for dialogue, consultation and negotiation that balance human and ecological interests	<ul style="list-style-type: none"> • Systems for multi-level stakeholder consultation • Multiple reflective conversational spaces • Integration of top-down and bottom-up transformative processes • Sustainability related global governance systems • Decentralized issue-related multi-stakeholder governance systems • Multi-stakeholder collaboration across societal sectors • Multi-stakeholder monitoring of SDG implementation • Issue-based peer-review and collective learning mechanisms (locally, regionally, nationally, internationally) • Fostering societal diversity
Innovation	Nurtured spaces for sustainability related innovation as well as prototyping for transformation	<ul style="list-style-type: none"> • Fostering space for creative social and technological innovation (awards, promotion, encounter) • Financial incentives for sustainability innovation • Creating systems for continuous improvement processes (rewards, exchange of good practices, knowledge networks) • Fostering prototypes for new ways of living, social interaction, governance towards sustainability • Establishing feedback mechanisms for accelerating transformation
Structures	Forms of organizations, institutional multiplicity as well as societal structures that enable widespread ownership for sustainability transformation	<ul style="list-style-type: none"> • Embedding sustainability transformation in administrative procedures (government and corporations) • Integrating sustainability transformation in operational guidelines • Making transformation skills part of human resource development in companies, civil society, educational and research institutions • Organizational incentive systems for sustainability transformation • Global and local networks for change • Flexible structures: multi-issue, multi-level, local to international, cross-sector, multi-stakeholder • Issue-based global transformation networks stewarding issue-related change • Strengthening civil society, small scale enterprises and decentralized democratic structures • Furthering decentralized forms of organizations and entities that further transformation

Driver 1: Narratives

Research conversation partners mentioned the need to accelerate a change in the mental models, mindsets, and stories of how the world works, because these narratives define humankind's responsibility and potential for sustainability transformation. Many conversations emphasized that the deeply ingrained 'economic paradigm' of individualism, competition, which underpins the current economic system leads to distorted and unhealthy growth patterns. Such patterns were seen to have created the sustainability challenges, and also to endanger transformation. Deliberately furthering a mindset shift into new narratives was seen as of utmost importance. Although the SDGs as such do not entirely question the economic growth paradigm, and may contradict each other's implementation, they were seen as a step ahead in humankind's ability to envision a future that is livable for all.

Driver 2: Metrics

Research conversation partners wanted to re-evaluate the measurements that currently dominate global development. They stressed the importance of raising awareness of the danger of poor metrics and the advantages of focusing on the appropriate data related to sustainability. Most saw this as a field 'under construction' as the complexity of sustainability requires new approaches to measuring human and ecological progress, and constant testing of current approaches. During many of the research conversations, participants raised the question of how far sustainability metrics could accelerate transformation and how using metrics (measurements, ratings, ranking, incentives, indexes, etc.) to provide feedback could raise awareness and encourage behavior change towards sustainability transformation.

Driver 3: Regulations

Research conversation partners affiliated with governments or the political arena highlighted political decision-making regarding laws and regulations to safeguard sustainable socio-economic-ecological interaction patterns. They referred to agreements on rules and boundaries for individual and collective behavior, and emphasized the importance of much more decisive action in the development of laws and policies that guide societal transformations to sustainability. They stressed that raising awareness and supporting voluntary approaches were important, but alone they would be too slow to prevent a major collapse of the Earth's life support system. Yet, some conversation partners believed that voluntary standards or agreements, if combined with mechanisms for disclosure and transparency, would engender peer group pressure (between government institutions, nations, but also between corporations) to create behavioral change.

Driver 4: Governance

Research conversation partners suggested in different ways that current governance systems based in the UN or dominated by industrialized nations (e.g. the G20) were inadequate to address the global challenges. They referred to establishing new or supporting existing multi-level, multi-scale and multi-issue governance forms that would create dialogic and consultative structures needed to negotiate different interests and address planetary health. Participants mentioned a variety of themes that included a planetary stewardship system, a more sustainability-focused democracy, and multi-stakeholder collaboration to

advance sustainability transformation on the ground.

Driver 5: Innovation

Research conversation participants emphasized the role of innovation for sustainability as a crucial driver of transformation. They suggested that the current wave of innovation support should focus on fostering spaces for creative social and technological innovation (awards, promotion, encounters) that were specifically geared at sustainability. This would include financial incentives as well as continuous improvement processes, for example in the form of rewards, exchange of good practices, and knowledge networks. Participants also mentioned that it is important to deliberately nurture existing and future experiments in new ways of living, social interaction, governance towards sustainability as well as new forms of money exchange and economic models that do not rely on the traditional growth paradigm.

Driver 6: Structures

Research conversation partners mentioned a variety of aspects that could be clustered under the heading of structures. This included the importance of embedding sustainability transformation in administrative procedures in government, mentioned above, but also integrating them into strategy and operational guidelines of large corporations. Participants mentioned that within and across organizations there was a need to incentivize sustainability transformation. New forms of less hierarchical organizing, such as networks, were mentioned as a loose but impactful way of organizing global to local action for transformation. These could be networks of experts from multiple stakeholder groups or organizations, or networks of organizations such as alliances, platforms, or initiatives, in the form of issue-based global transformation networks. Structures that would enhance transformation to sustainability would have to be flexible, multi-issue, multi-level, local to international, cross-sector, and multi-stakeholder. Strengthening civil society, small-scale enterprises and decentralized democratic structures were also considered to be important.

These categories match well with the current scholarly and practitioner discourse on sustainability transformation. The research inquiry conversations and the current scholarly discourse both portray thought and knowledge communities that tend to advance sustainability transformation by emphasizing one or a few of these intervention approaches. Yet, in line with the emerging 'patterns of aliveness' theory this dissertation argues that a better connection between these drivers and a more conscious complementary implementation of these six different strategies in a patterned relationship would enhance transformation efforts. It is suggested here that the six identified drivers for sustainability transformation can be linked to the aliveness enhancing organizing principles and to the human competencies of the practice model.

The emerging 'patterns of aliveness' theory suggested in Chapter 5 sees **leading transformative change collectively as the capacity of multiple actors to jointly steward co-evolutionary patterns of aliveness at multiple levels of the global system**. The following sections therefore suggest taking the drivers mentioned above and interpreting them as six 'enablers' rather than drivers. The following subsections explore each of these enablers and their relationship to the aliveness enhancing organizing principles, taking into

account the findings of the research conversations and the current scholarly and practitioner discourse. Each of the suggested enablers opens a door to an enormous body of academic literature, especially as each is linked to particular knowledge communities. The sections below can only give a short introduction to each theme.

7.2.1 Enabler 1: Enlivening Narratives

Envisioning a World that Works for 100% of Humanity and the Planet

The first important recurring theme in the research conversations was the role of ‘dominant’ narratives in holding sustainability transformation back. These dominant narratives include the view that humanity is separate from nature and the deeply-ingrained, competitive, exploitative, neoliberal economic model focused on *gain* as the main goal (Polanyi, 1957). Many participants emphasized the need to change these narratives, which they saw as deeply dysfunctional. They saw a need to shift the relationship between economy and society, to move from a view that society is an “adjunct to the market” (Polanyi, 1957, p. 57) towards a view of the economy in service of life (Goepel, 2016, Lovins⁶¹). Recently, the Stockholm Resilience Centre illustrated this shift in a visual model that integrates the 17 Sustainable Development Goals with a view of the economy in service of society and the planet. Fig. 10 shows this model.

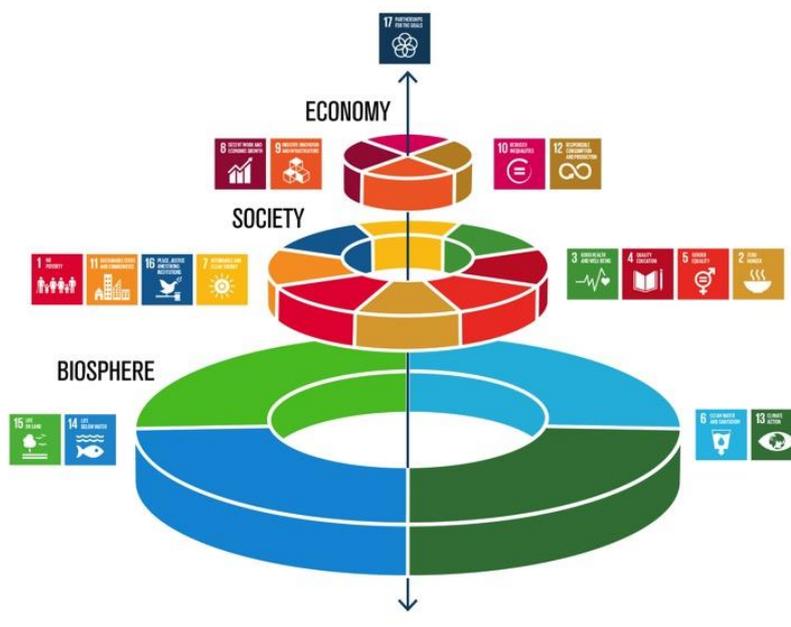


Figure 10: The economy in service of the society and the environment⁶²

The term ‘narrative’ evokes Meadows’ (1999) view that a paradigm shift in the way

⁶¹ Source: Personal conversation, see also with Hunter Lovins, President of Natural Capital Solutions (see also: <https://natcapsolutions.org/an-economy-in-service-to-life/>).

⁶² Source of image: Copyright 2016 by Azote Images for Stockholm Resilience Centre

humankind sees reality may be crucial for sustainability transformation. This dissertation's central focus is on how to advance a systemic view of reality as the foundation for leading transformative change collectively. However, the term narrative refers to more than a worldview; it includes the process of conveying a certain explanation of how the world works and what people should do. Often, a narrative describes a problem, shows the consequences, and suggests simple solutions that are easily comprehensible (Roe, 1994; Gadinger, Jarzebski and Yildiz, 2014). Narratives as repeated 'stories' resonate with people's meaning-making minds (Korten, 2015). Akerlof and Shiller (2010) assume that "the human mind is built to think in terms of narratives, of sequences of events with an internal logic and dynamic that appear as a unified whole" (p. 51). In their view, stories create a framework through which to understand intention and motivation for action. Stories help frame complexity in a way that it becomes digestible. Actions that fit the narrative seem 'logical' and are often widely adopted without further need to convince people or force them.

Narratives are impactful when they resonate with an interpretation of reality that is inherently available to those who hear the story. They are only effective when they are not simply repeated, but when they are co-constructed in a social (often also scientific) discourse (Chabay, Frick and Helgeson, 2016). To change behavior, they need to resonate with individuals and become anchored in their minds, so that they become, as Meadows (1999) puts it 'the new normal'. Narratives most often articulate the result of collective meaning-making and are grounded in real or made-up facts that then guide action. They can be employed in a manipulative way history has seen a number of abuses of the human desire for collective meaning-making and belonging (Arendt, 1970). Yet, people can be freed to change how they think and act when they realize that they had been caught and influenced by a certain narrative. This realization allows them to co-construct a new narrative. Human beings can break away from structures and from negative path dependencies, by changing their perception of reality and developing new narratives. These new narratives can take root in the collective consciousness and eventually become the dominant interpretation of reality.

A shift in thinking often precedes change in action. This process is supported by collective narratives, which, for better or worse, help people to emotionally engage with a different future. **Leading transformative change collectively cannot overlook the need to change collective narratives**, or as Korten (2015) says, change the story. The previous sections have argued that creating an emotional connection to a future that works for 100% of humanity and the planet is an essential part of helping a collective of actors steward patterns of aliveness. Many of the research conversation partners used terms like 'developing a new narrative', 'changing the narrative' or 'fostering the emergence of a new narrative.' From the perspective of the emerging 'patterns of aliveness' theory, narratives are an element of strategy towards sustainability transformation that furthers the principle of **intentional generativity**. Translated into the human realm this means that narratives speak to the human capability to find meaning, and consciously shape future collectively (Czarniawska, 2004; Czarniawska and Gagliari, 2003). Through the lens of the dimensions of the practice model, the Collective Leadership Compass, narratives enable sustainability transformation by telling, or co-creating, a story of the future that engenders responsibility and willingness to envision and enact **future possibilities**. But narratives also touch on other principles. They

further the principle of **permeable containment** when they offer meaning-making identification with a future state or a joint goal. In the practice model, they are often a prerequisite for an **engagement** with future-oriented action. Sustainability narratives also touch the principle of **mutually consistent wholeness**, as they refer to how the individual can develop a conscious relationship with the planet (Meadows, 1994). Scholars increasingly suggest closing the conceptual gap between a systemic approach to change, the notion of an interconnectedness of all life, and the need to incorporate this view into a narrative of responsibility for sustainability transformation (Chan, Cheung, Mok, Cheung and Tong, 2006; Pless, Maak and Stahl, 2011). Two particularly important narrative variations, both of which emphasize humanity's responsibility in the Anthropocene, are discussed here.

The first is a narrative in which *anxiety* leads to *responsibility*. Communication around this narrative highlights the threat (e.g. climate change, biodiversity loss, water wars) and the role of humankind in the Anthropocene to combat this threat by managing and controlling human behavior to mitigate the risks for future generations and other species on the planet. Examples of this narrative are the first Club of Rome report, 'Limits to Growth' (Meadows et al., 1972) and its update (Meadows et al., 2004); the concept of the 'Earth's carrying capacity' (Daily and Ehrlich, 1992); the discussion on 'safe minimum standards' (Crowards, 1998); and the concept of a 'safe operating space for humanity to thrive' in the context of avoiding further transgression of the biophysical planetary boundaries (Cornell, 2012; Rockström et al., 2009). A systems view of life is present in this discourse in the form of needing to reduce and manage the harmful human impact on a dynamic geo-and biosphere in order to safeguard life and eventually human well-being on the planet. Interpreted in the context of the pattern approach advanced in this dissertation, responsibility here refers to **safeguarding (global and local) patterns of aliveness**. This is currently the dominant narrative in the sustainability discourse.

The second narrative is built around *potential*, *co-creation* and *care-taking* leading to *responsibility*. Communication based on this narrative highlights current and future good practices, social and technological innovations that further sustainability, and the human capability to change thinking and pathways. It emphasizes the needed shift in creating or recalibrating the economy as one in service of the common good (Bollier and Helfrich, 2012). It is a narrative of possibilities and inventing a different future in an interconnected world – the geo-bio-anthroposphere. Examples of this narrative are the human responsibility to 'further life-enhancing structures and patterns' in the Potsdam Manifesto (Dürr, Dahm and Lippe, 2005); Korten's concept of an 'Earth Community' (Korten, 2007); the 'well-being' approach (Organisation for Economic Co-operation and Development [OECD], 2015); the concept of the 'regenerative economy' (Fullerton, 2015); the concept of the 'blue economy' (Pauli, 2010); the B-Team's 'Great Transformation' approach⁶³ or the 'Meadows Memorandum', (Leading4Wellbeing, 2017), which aims at driving "change in all the world's institutions, especially business, so they function to implement the new narrative of individual

⁶³ Source (accessed on 15th April 2017): <http://bteam.org/>

freedom achieved through shared well-being (prosperity and flourishing) on a healthy planet” (p. 4).

One of the research conversation partners from the corporate world captured this narrative’s potential impact on corporations. He said that the current sustainability discourse in companies is dominated by approaches focused on risk and compliance management, while he believed that the discourse needed to shift towards business strategies with a focus on ‘contribution’ to a thriving planet and humankind. An understanding of life as a dynamic interconnected relational process, of which humankind is part, is sometimes explicitly and sometimes implicitly conveyed in the ‘potential’ narrative. In the context of the emerging ‘patterns of aliveness’ theory, responsibility in this narrative may include **safeguarding (global and local) patterns of aliveness**, but goes beyond global risk management and emphasizes the human ability to **regenerate and even co-create patterns of aliveness**.

Both variations of a sustainability narrative exist in complementary and hybrid forms. The above visual graphic of the SDGs in relation to the three intertwined spheres of economy, society and biosphere (geosphere) can be interpreted as an attempt to integrate the two observed narratives. **The two sustainability narratives may be seen as complementary on a continuum between encouraging actors to safeguard patterns of aliveness and enhancing the collective capability to regenerate and co-create patterns of aliveness in socio-ecological systems.** Emphasizing only the first may lead to resistance or denial, as some of the research conversations partners mentioned. Widespread ignorance of the scientifically proven threats of climate change demonstrates this (Gonzalez-Gaudio and Meira-Carrea, 2009). If, however, the emphasis is only on the second, co-creation narrative, people might also become complacent and forget the need to quickly change behavior in the face of grave challenges. These deliberations lead to the second enabler.

7.2.2 Enabler 2: Empowering Metrics

Raising Consciousness for Global and Local Responsibility

The second important recurring theme in the research conversations was the view that the world is flooded with widely-unquestioned measurements that guide development in the wrong direction. An example often cited was the Gross Domestic Product (GDP). GDP is increasingly criticized as an entirely insufficient metric for human progress, and misleading in some of its calculations (Constanza et al., 2014). For instance, it includes the costs of alleviating environmental damages (such as oil spills) as part of an economy’s growth. Measuring how many financial resources spent in a particular country is seen as a questionable indication of the country’s economic well-being. As early as 1968, US senator Robert F. Kennedy questioned this approach to progress measurement, saying that the GDP “measures everything, in short, except that which makes life worthwhile.”⁶⁴ He emphasized

⁶⁴ Quote retrieved on 10th May 2017 from <http://www.oib-france.com/gross-domestic-product-in-1968-by-robert-f-kennedy/> , the full quote retrieved is: *“Too much and too long, we seem to have surrendered community excellence and community values in the mere accumulation of material things. Our gross national product ... if we should judge America by that – counts air pollution and cigarette advertising, and ambulances to clear our highways of carnage. It counts special locks for our doors and the jails*

that the quality of life gets lost in this reductionist measurement. Henderson (1995), a well-published futurist, also argued that a single indicator cannot be an appropriate instrument to measure the complexity of modern societies.

Despite many attempts to develop new, better-suited metrics of social progress, such as the OECD Better Life Index (Mizobuchi, 2004), the Gross National Happiness Index⁶⁵, or the more traditional Human Development Index⁶⁶, the metrics that guide most mainstream governmental and business action still rely on measurements that do not take into account sustainability as a global goal. However, there are emerging attempts to find ways of monitoring SDG implementation at multiple levels of the global society and to integrate such results into the voluntary accountability procedures for societal and global progress (Rickels et al., 2016). Some of the research conversation partners expressed reservations about what they saw as excessive attention to measurements in the sustainability transformation discourse, but most saw indicators as an important enabling element of sustainability transformation.

Metrics of various forms can describe a situation, highlight imbalances, or suggest thresholds. They help the human mind understand a situation, indicate a future target, or show the distance between the present state and an anticipated future development. They show rhythms as much as movements. Ideally, they can alert to danger and help actors recognize a problem early enough to respond. Leading transformative change collectively cannot do without metrics as part of a complex feedback system. From the perspective of the emerging 'patterns of aliveness' theory, they enhance the ability to perceive reality, spur reflection, and help adjust action. As such, they foster the principle of **proprioceptive consciousness**. It even appears that actors become more human, as they begin to use sustainability metrics that connect them with a holistic view of humankind and the planet. The conceptual architecture advanced here would interpret this as the principle of **proprioceptive consciousness** furthering the principle of **mutually consistent wholeness**.

However, metrics are often perceived solely as indicators of circumscribed problems, and not related to the larger system. Narrowly-focused metrics gave rise to the reservations expressed by some of the research conversation partners. They alerted to the danger of metrics as furthering the illusion that life on Earth must be managed, controlled, planned, and measured by humankind. In that way, they saw **the danger that concentrating on metrics fuels a worldview and subsequent narrative of control rather than enablement**. Yet, metrics to measure sustainability progress have proliferated within the growing sustainability

for those who break them. (...)

*Yet the gross national product does not allow for the health of our children, the quality of their education, or the joy of their play. It does not include the beauty of our poetry or the strength of our marriages; the intelligence of our public debate or the integrity of our public officials. It measures neither our wit nor our courage; neither our wisdom nor our learning; neither our compassion nor our devotion to our country; **it measures everything, in short, except that which makes life worthwhile**. And it tells us everything about America except why we are proud that we are Americans."*

⁶⁵ For more details, see the following source (accessed on 3rd May 2017): <http://www.grossnationalhappiness.com/nine-domains/>

⁶⁶ For more details see the following source (accessed on 3rd May 2017): <http://hdr.undp.org/en/content/human-development-index-hdi>

transformation discourse. Metrics intended to measure the state of or progress toward sustainability, at least to a certain degree, reflect the inherent complexity of the societies, geology, and biology with which they engage (Hezri and Dovers, 2006; Moldan, Janouskova and Hak, 2012). They need to be complex to measure many variables (Kates, Parris and Leiserowitz, 2005) and move the application of metrics towards a more integrated worldview. By cautious estimate there are more than 100 sustainability indicators (Vázquez, Jesús, Cedano, Martínez and Jensen, 2015). The research conversation partners from the private sector highlighted that, particularly in the business context, sustainability metrics have proliferated. It is increasingly confusing and difficult to manage so many standards to be adhered to, or developments to be reported.

The diversity of sustainability metrics challenges the transformation discourse, as it raises the questions of which metrics best force, guide, incentivize, or even empower a wide range of corporate and government actors to make appropriate decisions and act in accordance with a sustainability paradigm. Scholars argue it is crucially important to raise awareness of how far humankind is from sustainability targets, and how close to planetary collapse (Stieglitz, Sen and Fitoussi, 2009). The famous Club of Rome report, 'Limits to Growth' (Meadows et al., 1972) drew on facts, figures, and predictions, suggesting that metrics could contribute to a rising awareness that current economic expansion and growth paradigms could not be sustained. Scholars do not agree on the extent to which sustainability metrics should be a guiding force for policy-makers (Moldan et al., 2012) and practitioners. Like narratives on sustainability transformation, indicators behind sustainability metrics need to resonate with decision-makers (Levett, 1998). They also need to be integrated in existing planning and evaluation procedures. Above all, sustainability metrics need to empower action toward sustainability, not only in the political sphere, but also on the part of a variety of stakeholders (O'Malley, Cavender-Bares and Clark, 2003). The degree to which this can happen depends on the relevance of the metrics and their social legitimacy. After the agreement on the 17 SDGs, new discourses emerged on how best to measure and monitor the implementation of the SDGs, and how to relate this to other existing sustainability metrics. Particularly among civil society actors, such as the NGO 2030watch⁶⁷ part of this discussion focuses on the extent to which measuring and monitoring should involve a broad group of stakeholders from civil society organizations and the public.

Broader engagement of stakeholders in metrics has become increasingly common in the form of standards, reporting guidelines, definition of targets, or thresholds. This increases their legitimacy, but also furthers their impact as guiding information for decisions and collective action. Hezri and Dovers (2006) suggest that dialogue with potential 'users' of metrics increases the sense of ownership needed to ensure that they are used. They state: "When developed and shared across a network of actors, indicators have a communicative function, enlightening and informing the worldviews and values of developers and users" (p. 95). Other authors suggest that sustainability indicators that resonate with decision-making actors are communicatively and socially constructed (Astleithner and Hamedinger, 2003) as

⁶⁷ For more details see the following source (accessed on 3rd May 2017): <https://2030-watch.de/>

part of a collective learning journey that eventually informs decision-making. Hezri and Dovers, (2006, p. 92) note that an indicator's relevance depends on its 'resonance' with the actors which rely on it for guidance, and that this is related to both the actual content and the legitimacy of the indicator.

Globally-accepted sustainability metrics for the planet as a whole include: the ecological footprint⁶⁸, the warming of the atmosphere and oceans⁶⁹, and CO² emissions⁷⁰. One science-based metric approach that is increasingly influential in the European public domain, and in the science and practice discourse on how governments can steer transformation to sustainability nationally and globally is the concept of the 'planetary boundaries', shown in Fig. 11. As a number of research conversation partners mentioned this concept, it is explored here in greater depth.

Human-induced pressure on the bio- and geosphere has increased tremendously in the last 25 years and the damaging results are well documented (UNEP 2012; IPCC 2014). Due to increasing economic activities, resource consumption, population growth, and other factors, some of the endangering drivers are accelerating (Steffen et al., 2015a), and some argue that the geo- and biophysical support system of life on planet Earth is already severely compromised. In 2009, a number of researchers proposed a framework of planetary boundaries that demarcated a 'safe operating space' for humankind in the Anthropocene (Rockström et al., 2009; Steffen et al., 2015b). Based on a view of the Earth as an integrated complex living system (Sahtouris and Lovelock, 2000) and the scientific evidence that the interaction of Earth system processes can be related to a limited number of interdependent measurable biophysical thresholds, these researchers suggest nine planetary boundaries: climate change, novel entities, stratospheric ozone depletion, atmospheric aerosol loading, ocean acidification, biogeochemical flows, fresh water use, land system change, and biosphere integrity (Rockström et al., 2009). These boundaries demarcate the 'safe operating space', in which stabilizing feedback systems at planetary scale exist and within which social as well as economic development needs to take place to maintain the resilience of the Earth system as a whole. The boundary concept suggests collective human interventions should be managed to avoid transgressing the thresholds. **For stewarding transformation to sustainability, this means that the human impact on these boundaries needs to be managed in multiple interlinked and mutually influencing safeguarding interventions.**

⁶⁸ See for example (accessed on 6th May 2017): (<http://www.footprintnetwork.org/our-work/ecological-footprint/>)

⁶⁹ See for example (accessed on 6th May 2017): <https://www.epa.gov/climate-indicators/climate-change-indicators-sea-surface-temperature>

⁷⁰ See for example (accessed on 6th May 2017): <https://www.co2.earth/global-co2-emissions>

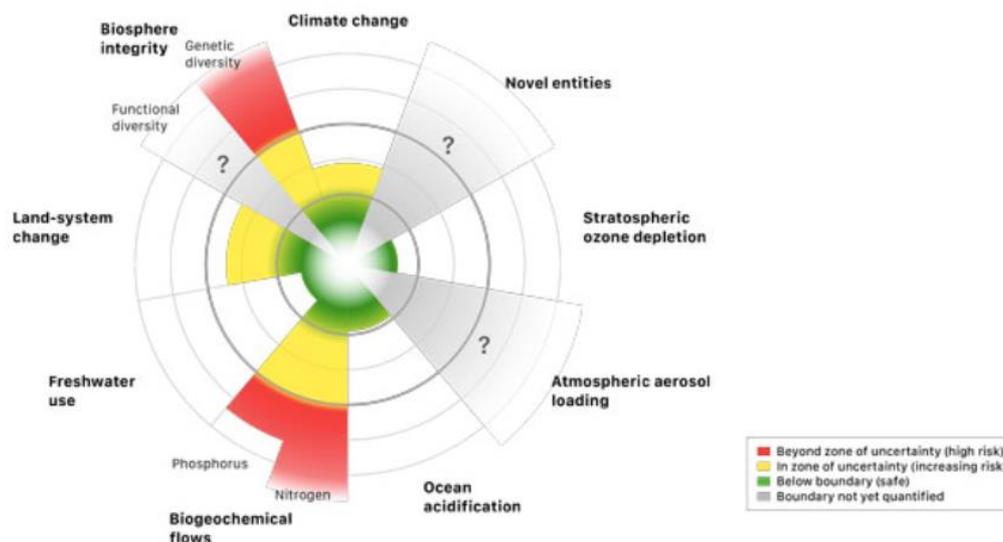


Figure 11: The Planetary Boundaries⁷¹

This connects well with re-conceptualizing the economy in service of the (global) society and a geo-and biosphere as a life support system discussed earlier. Although largely built on a ‘threat’ narrative, the planetary boundary concept draws attention to the **globally interacting socio-ecological system as a pattern**. This should support the global discourse on urgent collective action for sustainability transformation (Feola, 2015). The planetary boundary concept does not suggest specific pathways to change, elicit policy proposals, or offer specific guidance for behavior change. However, as it shows a patterned relationship between multiple indicators, it might function as a meta-level guidance through global metrics that foster policy decisions. The concept, in its scientific emphasis on figures that are not easily comprehensible, may be somewhat removed from the everyday understanding of actors attempting to lead sustainability transformation. However, its visual narrative message (avoiding danger) and its guiding communicative function together further collective learning, and may increase collective action. In fact, it has already spurred some governments to investigate how they could reduce their negative impact on the thresholds⁷². In the context of this research’s focus on leading transformative change collectively, using the lens of the conceptual framework advanced here, the planetary boundary concept is an interesting pathway into helping multiple actors safeguard ‘patterns of aliveness’. Although the concept implies a ‘management control’ approach to sustainability transformation, it also refers to a life-support system⁷³, and thus draws on the human nature of care-taking.

Using metrics (measurements, ratings, ranking, incentives, indexes, etc.) as feedback systems that encourage collective behavior change can be considered an important accelerator of sustainability transformation. Care-taking of a life support system needs to be collectively and socially constructed, however, which leads to the next enabler – the role of

⁷¹ Source: Steffen et al. (2015b). Copyright 2015 by The American Association for the Advancement of Science.

⁷² See the information on the Planetary Boundaries Conference in Berlin April 2017: <https://pb-conference2017.de/>

⁷³ Source (accessed on 3rd April 2017): <https://www.newscientist.com/round-up/ocean-to-ozone-earths-nine-life-support-systems/>

governance systems for sustainability transformation.

7.2.3 Enabler 3: Patterned Multi-Level Governance

Accelerating Collective Sense-making and Collective Co-Creation Processes

A number of research conversation partners stressed the need to reform or 'transform' existing forms of global governance as an important driver for transformation. They also mentioned that the urgency and the multiplicity of sustainability challenges demand collective action at multiple levels of the global society. They hinted that multi-stakeholder collaboration and dialogues as new forms of governance that should be advanced as complementary to the formally existing global structures (Lodge, 2007). The term 'governance' was initially a synonym for the term 'government' in political science (Rhodes, 1996), and also described the quality of the way governments operate (Stoker, 1998). The term has increasingly assumed new and broader meanings in social and political science and economics. It has been adopted by the discourse on socio-cybernetic systems (Pask, 1992) and the role of policy networks (Rhodes, 1996). Hezri and Dovers (2006), while referring to Kjaer (2004), suggests that the discourse on governance focuses on democratic practices on the one hand, and on efficiency as part of accountability on the other hand.

Governance has only gradually begun to refer to multiple ways of collectively steering societies, or even global issues, either towards agreed-upon goals or away from danger. It also refers to the governance of local communities (Burns, 2015). Multi-stakeholder compositions, and the participation of various societal groups in policy-developing and decision-making are increasingly seen as important for addressing complex societal or global challenges (Bäckstrand, 2006; Biermann et al., 2007). For example, in the case of governance systems for responsible value chains, such compositions can include stakeholders from public sector and private sectors, or all societal stakeholders, as in the case example of the Common Code for the Coffee Community (Kuenkel et al., 2009). Boström et al. (2015) see governance not necessarily as an alternative to the steering function of governments, but as a complementary, or sometimes even integrated, form of collaboratively arriving at an improved situation for all. This can happen by coordinating activities or consulting stakeholders, and it can include formal and informal communicative arrangements.

The introduction of voluntary standards in global supply chains is one way that stakeholders have been integrated into the process of improving environmental and social sustainability (Bush, Oosterveer, Bailey and Mol, 2014). Beyond the need to find new ways of governing supply chains for more sustainable production and consumption patterns, issue-based local forms of governance are emerging around themes of common concern, such as resource management in the case example from Tunisia. In the context of sustainability, such forms of governance exist in multiple forms to bring stakeholders from the public sector, the private sector, and the civil society sector into collective learning and decision-making processes. Ansell and Gash (2012) explored the emerging concept of 'collaborative governance', which they define as "a governing arrangement where one or more public agencies directly engage non-state stakeholders in a collective decision-making process that is formal, consensus-

oriented, and deliberative and that aims to make or implement public policy or manage public programs or assets” (p. 544). They observe that multi-stakeholder collaborative governance has often emerged from local attempts to solve social problems where traditional top-down government approaches failed. These approaches often provide a new avenue beyond negotiation between established, opposing societal groups. The Tunisian case example reflects such an approach.

Chapter 6 discussed the potential role of multi-stakeholder collaboration and governance systems as a laboratory for transformative change. These emerging forms of governance reflect processes of *collective sense-making* and *collective co-creation*. Across the boundaries of traditional institutions and organizations, such processes begin to collaboratively co-construct new realities from local to global scales. They already exist in multiple forms and at multiple levels. Through the lens of the emerging ‘patterns of aliveness’ theory, such forms of governance express and strengthen the principle of **contextual interconnectedness**. Through the lens of the practice model, they utilize the human competency dimension of **collective intelligence**.

Historically, governance systems have always existed as a pathway to human communicative interaction and as a way to arrive at solutions in a negotiated balance between the interests of the individual and the interests of the whole. One example is the *Lekgotla*⁷⁴, a form of governance practiced by traditional and modern societies in the Southern African region. By design, the Lekgotla is a forum for open communication and decision making in which all adult members of a community participate (De Liefde, 2003). Such deliberative approaches are never objective processes, but shaped by the many interpretations of the socially constructed worlds of the different stakeholders (Gergen, 2015). The emergence of multiple governance systems might indicate that **human progress in the Anthropocene needs to establish multi-level, multi-issue, and multi-stakeholder dialogic and collaborative spaces in which the variety of socially constructed realities can be explored and harvested for a constructive future**.

Governance systems as enablers of transformative change towards sustainability also enhance the principle of **proprioceptive consciousness**. In more practical terms, they contribute to a mindset shift towards more widespread awareness of an interconnected nature of reality. They support the emergence of awareness of and responsibility for the planet as a whole, or at least, the next level system of any form of change endeavor. Thus governance systems can engender the principle of **mutually enhancing wholeness** and foster the principles of **intentional generativity**. A greater awareness of both, through collective sense-making and collective co-creation, becomes a cornerstone for enacting all the principles and shifting patterns out of dysfunctionality towards aliveness. **Actors who aspire to individually or collectively lead transformative change need to be aware of their own socially constructed view of the world and understand the underlying potential of collective sense-making and collective co-creation systems at multiple**

⁷⁴ Lekgotla is in South Africa sometimes referred to as ‘Dialogue of Leaders’ and regularly used for example for Cabinet reviews also (De Liefde, 2003, p. 56).

levels of scale, from small group deliberations to collaboratively stewarding the health of the planet. Governance systems, in this argument, are ways that collective sense-making and collective co-creation can more consciously be used to steward, maintain 'patterns of aliveness' in socio-ecological systems.

The academic discourse on governance systems has gradually begun to look beyond government-initiated consultation processes and responsible value chain governance, to consider the multiple small and networked forms of governance that have emerged around attempts to better manage the global commons, from rivers to oceans, and from biodiversity to climate (Dietz, Ostrom and Stern, 2003; Biermann, 2014). Governance systems manifest interconnected linkages between multiple actors and multiple scales to harvest differences in perspective, expertise, power, and experiences for progress. Diversity, already understood as a prerequisite for resilience, is also important for sustainability governance systems. To fulfill their function, governance systems need to span multiple connected systems across institutional boundaries, stakeholder communities, thematic issues, and societal levels. **Governance systems can be seen as multi-level patterned social constructions that help multiple actors steward co-evolutionary patterns of aliveness in socio-ecological systems.** Societies that have established such networked governance systems might be more capable of adapting to unpredictable changes and transforming towards sustainability in a continuous learning process (Dietz et al., 2003). Both Dietz et al. (2003) and Biermann (2014) mention the role of technical and political infrastructures in their deliberations about governing the commons and improving earth systems. Structures, the next enabler for transformation to sustainability, are not obsolete, even with advanced forms of governance.

7.2.4 Enabler 4: Enabling Structures and Processes

Building the Infrastructure for Leading Transformative Change Collectively

Very few of the research conversation partners explicitly mentioned the role of structures, and even less so processes. Those who did expressed concerns with overcoming existing institutional structures, particularly power structures, that tend to keep unsustainable operations in place. They also mentioned dissolving hierarchical structures that impede self-organization and empowerment. As previous chapters have argued many of the obvious global challenges might be seen from a pattern perspective as dysfunctional patterns of socio-ecological interaction that are caused most often by equally dysfunctional patterns of human interaction. Hence, they are humanly made structures that limit the pathways to change through structural determination (Maturana and Varela, 1991).

The runaway feedback loops that increase or perpetuate dysfunctionality can in many cases be predicted. For example, it is clear to many researchers and activists that, if climate change continues at the current rate, there will be more economically and environmentally induced migrations, water scarcity will lead to wars, environmental destruction to health hazards, and subsequently to social unrest, and so on (Hanjra and Qureshi, 2010; KPMG, 2012; Kraemer et al., 2017; Rockström et al., 2009; Vörösmarty et al., 2000). Many experts see certain existing structures of societal and global organization as dysfunctional and warn of the dangers they will cause for natural and human systems (Armitage et al., 2009; Daily,

1997; Folke, 2006). Even though they are thoroughly grounded in facts, their warnings are still widely ignored, or at least not acted upon at the necessary scale. This highlights relationships between patterned human behavior and certain structures.

As the research conversations showed, actors who intend to lead transformative change collectively are faced with mental, institutional, legal, and physical structures that impact human behavior and human-to-human and human-to-nature interaction. Structures created by humans, such as institutions, laws, procedures, incentive systems, or others, can be more or less supportive of emerging patterns of aliveness. They can further aliveness of a system, or deteriorate and compromise it. At global and society scales, many structures determine human behavior and human thinking. For example, the slow pace of the minimal climate agreement reached in Paris in 2016 is partly due to economic structures and partly due to mental structures that deny climate change as a reality (Gonzalez-Gaudiano and Meira-Cartea, 2009; Stern, 2015). It is complicated by the structural set-up of nation states, which prioritize their own interest at the expense of the whole (Biermann, 2014). Climate change is an example of a global challenge that impacts across national boundaries, yet is mostly being addressed within the structures of nation states.

Structures as such are not the problem. The challenge lies in the structural determination or negative path dependencies that occur. Structures hinder sustainability when they impede learning and adaptation. To understand how leading transformative change collectively in the form of stewarding co-evolutionary patterns of aliveness can take place, it is important to note that patterns and structures are intrinsically linked in life (Alexander, 2002a). Chapter 4's deep dive into systems theory suggested that the evolutionary process forms physical or mental structures as the basis of patterns. As Chapter 5 suggests, patterns of aliveness could not occur without structures that allow for **permeable containment**, enhance **contextual interconnectedness**, and link subsystems to larger systems in **mutually consistent wholeness**. Structures that do not further aliveness emerge when subsystems win over the larger systems, or vice versa; if the connectedness becomes rigid or breaks; or if boundaries become too loosely or too rigidly defended.

Every structure in the overall life system is temporary. Structures stabilize patterns in the same way for patterns of aliveness as for dysfunctional patterns. Hence, structure needs to be renewed, shifted, changed, adjusted, or maintained to serve patterns of aliveness. **Shifting mental or physical structure lies at the core of leading transformative change collectively.** Both case examples showed that mental, legal, economic or institutional structures hold dysfunctional human interaction patterns in place. In the case of coffee, the race-to-the-bottom commodity price logic of European or American consumers created patterns of interactions in the global supply chain that led to severe exploitation of green coffee producers. Through the lens of the life-enhancing principles and the practice model, the **engagement** of actors into new and collaborative structures, following the principle of **permeable containment**, opened up pathways towards the principle of **intentional generativity**, and invigorated the dimension of **future possibilities**. In the local water example, the undeniable effect of climate change coupled with a weakened government administration led to the mismanagement and overutilization of water resources. The loosely organized dialogic process helped overcome rigid mental and organizational structures and

opened actors to perceive their joint responsibility for addressing the water challenge. Seen through the lens of the principles this engendered a sense of **mutually enhancing wholeness**.

As mentioned in Chapter 4, the relationship between structures and human interaction patterns is most obvious in physical structures like buildings, as Alexander (1979, 2002a) suggests, or cities, as Jacobs (1961) proposes. Jacobs argues that the physical layout of cities influences mental structures. This principle works similarly in social or institutional structures. If, for example, mental structures are communalized and strengthened by narratives, and supported by institutional and political structures and metrics, they become increasingly difficult to change. The following example illustrates the role of structures.

The way humankind currently handles the transgression of the planetary boundaries (Rockström et al., 2009) that is already occurring, is largely determined by current structures and processes in governments and corporations. These structures are difficult to change, although they are well known to accelerate negative path dependencies. Structures can harm aliveness if they are not monitored for their impact on patterns of aliveness and subsequently adapted. Combined with narratives that emphasize individual gain, and metrics that limit the complexity of human progress to economic growth, they determine socio-ecological systems interactions in a way that increases false patterns of aliveness for certain actors, while endangering patterns of aliveness for others. For example, corporations that do not need to fully internalize the social and environmental costs of production and trading into their operations grow profits at the expense of the environment and certain people. Governments that desire to stay in power and avoid passing unpopular environmental regulations maintain a status quo at the expense of the future. Citizens who happily increase consumption while ignoring or remaining unaware of the damage production and waste cause to others or the planet increase their individual well-being through consumption at the expense of the well-being of others or the larger system to which they belong. Structures can, if not amended, contribute to deteriorating patterns of aliveness and keep dysfunctionality in place or even accelerate it.

However, the history of humankind shows that structures and subsequent dysfunctional patterns of interaction can be changed. The question with regard to the planetary boundaries is whether this can happen fast enough to avoid large-scale destruction. There is never only one way of changing structures that give rise to dysfunctional patterns of socio-ecological interaction, and never only one pathway towards patterns of increasing aliveness. In the water example, the backbone organization and stakeholders created two new structures to guide more functional patterns of interaction between all stakeholders. One was the agreement on a water charter that asked for voluntary compliance, and the other was the water forum with a governance structure representing all stakeholder groups. **Shifting patterns of interaction towards better functionality in leading transformative change requires attention to structures that hold dysfunctionality in place and the establishment of new structures that can hold the newly developed patterns of interaction.**

Not surprisingly, some research conversation partners mentioned the role of networks or

networked structures as drivers for sustainability transformation. As forms of organizing collaborative change, networks are closely related with enabler of multi-level patterned governance. However, networks and governance systems are not the same. Networks form around a certain perceived collective identity (Waddell, 2011). This can be an expertise or interest, as in research networks, or a shared issue, as in collaborative networks that advance sustainability issues. In the last decade, many global transformation networks have emerged to focus on advancing sustainability in general, such as the Sustainable Development Solution Network (SDSN)⁷⁵, or working on certain sustainability themes, such as The Alliance for Financial Inclusion (AFI)⁷⁶, or the Global Water Partnership (GWP)⁷⁷, among many others. These global action or knowledge networks often span the boundaries of organizations, but they can also be established within societal sectors, such as within government departments, between government departments, or within large companies. Networks are formal or informal organizations that are distinct from organizational or institutional structures, and usually transcend the boundaries of more formal structures. Although structures develop various degrees of inertia and actors tend to keep structures in place, networks are not final solutions, but temporary solutions that require adjustments in iterative learning curves. **Stewarding transformative change collectively requires realizing the temporary, yet impactful, nature of mental, institutional, societal, or physical structures.** It also means enabling actors to review, amend, and co-create structures conducive to aliveness. In the context of overcoming dysfunctional structures and accelerating transformation in networks, the research conversation partners also mentioned the role of innovation as a driver for transformation. This leads to the next section.

7.2.5 Enabler 5: Sustainability-Oriented Innovation

Nurturing Life-Enhancing Social and Technological Advancements

Almost all research conversation partners mentioned the role of innovation as a driver of sustainability transformation. They hinted at the need for both social and technological innovation on a large scale and remarked that innovation was often only seen as technological. Partners stated that rigid structures (in government or corporations) or somewhat insufficient governance systems (such as the current UN system) could impede creative and innovative solutions. Some of the research conversation partners highlighted a view that narratives, which focus too much on threats, lead to feelings of powerlessness and subsequent inertia to take action. But most observed that the theme of innovation has increasingly been seen in the last decade as a collaborative activity. In their view, this gives hope that the actual content, whether products, processes or social and environmental services, would be much more conducive to sustainability than previous inventions.

Schumpeter (1939) introduced the term 'innovation' several decades ago as a critical component of economic development and a competitive advantage for corporations as they

⁷⁵ Source (accessed on 3rd April 2017): <http://unsdsn.org/>

⁷⁶ Source (accessed on 3rd April 2017): <http://www.afi-global.org/>

⁷⁷ Source (accessed on 3rd April 2017): <http://www.gwp.org/>

pursued sustained growth. More recently, the term is also used in the social sciences in the context of creativity and renewal, and in the development of new insights and pathways to social change (Avelino et al., 2014). In the last decade, the term 'social innovation' has come to mean new ways to overcome social inadequacies and help address societal challenges through products, services, or organizations (Westley and Antadze, 2010), that lead to changes in social practices, roles, values and norms (Franz, Hochgerner and Howaldt, 2012). Loorbach et al. (2016) see a potential for transformative impact in social innovation initiatives that emerged in response to the global financial and economic crisis.

Social and technological creative processes that lead to innovation have been with humanity through history. Prototyping new ideas, testing their relevance, and building the financial and organizational infrastructure to apply them are not new. Innovation drives the growth of organizations and the development of societies. It is at the core of the human evolutionary process. Recent years have seen, on the one hand, more profound understanding of innovation as an open-ended collaborative process that can involve multiple societal stakeholders. On the other hand, innovation has increasingly been conceptualized in relation to sustainability (Klewitz and Hansen, 2014). The 'user innovation' concept, proposed by von Hippel (2010), shifts the role of users from consumers to empowered creators of products and services, because users have the best understanding of their own needs. Most often, such innovation processes are shared collaboratively within a community of interest, resulting in open source or creative commons licenses or even collective governance of results (Hippel, 2010).

Sustainability-oriented innovations in the private sector still seem to focus on the ecological aspect of sustainability and on technologically driven innovation. Klewitz and Hansen (2014) suggest distinguishing between *process innovations* (e.g. to reduce environmental impact), *organizational innovations* (e.g. regarding change management systems towards sustainability compliance or innovations as contributions to well-being societies), and *product innovations* (e.g. those produced in a sustainable manner or that help consumers safeguard sustainability). Seen through the lens of the emerging 'patterns of aliveness' theory, social and technological innovations are related to the principle of **emerging novelty**, and the human urge to find new solutions emerges from a deeply rooted human competency for **innovation**. When innovation turns into collective design and integrates collaboration and input from various stakeholders, it moves from isolated improvement or brilliant invention into a service to humankind based on **collective intelligence**.

Innovation does not happen in isolation. It is socially constructed and relational in its occurrence. It is built on encounters, conversations, exchange of ideas, and inquiry (Stamm, 2008). Innovation can be seen as an evolving process that requires challenging existing knowledge, learning together, reframing reality, and understanding something new. Making this individual and collective process more conscious is a cornerstone in creating a sustainable future (Stamm and Trifilova, 2009). A new idea is often a result and manifestation of a set of interactions between people deliberately structured into a process that generates innovation. Insights lead to creative designs, in a mix between individual creativity and collective input. In recent years, various stakeholders in private and public sectors have taken up the methodological approach of 'design thinking' (IDEO, 2008; Brown,

2009). This methodology focuses on diverse perspectives by integrating human, business, and technological factors expertise into an interactive process of idea creation, prototyping, and iterative improvement. More recently, public sector actors used various kinds of 'innovation or change labs' (Bason, 2011) to address policy and public service challenges, often related to sustainability issues. This approach, which combines experimental methods with stakeholder consultation and collaboration, is certainly unusual for most government institutions, especially when it involves the collaboration across different government departments. Innovation labs take different forms and may use Design Thinking methods or other communicative and process methodologies. But most often they share a number of features with multi-stakeholder collaboration initiatives. They involve stakeholders from various levels of either service delivery or policy development across all societal sectors, and integrate best practice examples and knowledgeable experts. Another emerging format for collaborative innovation is the concept of 'living labs' (Leminen, Westerlund and Nyström, 2012). These emerged around 2006 with support from the European Community to foster innovation through structured networks of stakeholders at the regional, national and Europe-wide level (Dutilleul, Birrer and Mensink, 2010). Originally the approach focused on helping private sector entities collaborate in real-world settings with users to develop new products and services. More recently the concept has broadened to include innovative strategy design for issues of common concern, often driven by public sector, but involving multiple stakeholders. These are similar to the format of 'innovation labs' mentioned earlier.

Seen from the perspective of the emerging 'patterns of aliveness' theory, innovation labs and living labs invigorate the principle of **emerging novelty**, but they do so by integrating other principles such as **contextual interconnectedness** and **intentional generativity**. Translated into the practice model, they emerge from the human competency for **innovation**. At the same time, they build on and further the human competency dimensions of **future possibilities, collective intelligence and engagement**. In relation to the sustainability transformation enablers, innovation labs are greatly supported by *enlivening narratives*, but also reinforce them. They touch on *governance systems* in the sense that they encourage co-creation and co-design between multiple stakeholders. The various collaborative approaches to innovation have only gradually been adopted in the context of sustainability and the Global Sustainable Development Goals as a way to foster innovation.

Westley et al. (2011) and Ernstson et al. (2010) suggest that technological innovation, which is not guided towards sustainability, may tend to follow and reinforce negative path dependencies in an economic system that is built on social imbalances and the exploitation of natural resources. Even innovation that originally intends to support sustainability may cause environmental hazards. One example is the invention of biofuels. While intended to reduce dependence on fossil fuels, they ultimately reduced areas available for food production and increased the utilization of large monocultural fields that cause environmental damage. This example shows how well-intended innovations might cause harm and undermine sustainability transformations when not accompanied by iterative learning and reflective adaptation. Harnessing innovation for sustainability requires understanding the world as an interconnected system and humanity as a web of relationships. With society's needs and the responsibility for an integrated planet in mind, countless avenues for

innovation are opening for companies, public sector and civil society. **Hence, leading transformative change collectively and stewarding co-evolutionary patterns of aliveness requires encouraging multiple forms of innovation, as well as connecting people who are inventive and spaces in which innovations happen.** It means innovation needs to be encouraged, nurtured in spaces of creativity, encounter and collaboration, but also guarded or channeled towards transformation to sustainability. This leads to reflection on the role of regulations, the next enabler.

7.2.6 Enabler 6: Guiding Regulations and Balancing Resource Allocations

Safeguarding life's integrity at all levels

A number of research conversation partners advocated regulatory approaches to sustainability transformation based on the view that, in the Anthropocene, the adverse impact of humankind on the bio- and geosphere needs to be limited and managed through binding laws that come with provisions for sanctions. They argued that decisive political decisions, laws, regulations, tax incentives, new taxes, and deliberate resource allocation for the redistribution of wealth are needed to accelerate behavioral change towards sustainability. While few considered this the most important driver for sustainability transformation, nearly all suggested that regulations and resource allocations are indispensable for sustainability transformation, and would complement other drivers.

In most conversations people mentioned that the political arena is not the only one expected to change course, but that without sustainability-focused political decisions, all other efforts would be in vain. One example of rigorous political decision-making given was the announcement by the government of Norway that combustion vehicles would be phased out by 2025. Green tax incentives make electrical vehicles more attractive for consumers (Albrecht, 2006). Another example was the recommendations to the G20 group in a report from the German Advisory Board Global Change (WBGU, 2016). One of the recommendations is to create a 'future fund' (WBGU, 2016, p. 25) as a kind of transformative state fund. The fund would be supplied through carbon taxes, emission trades, and inheritance taxes. Investment strategies would be oriented strictly towards long-term sustainability goals with equal allocations to structural support for transformative social and economic change, direct investments in climate friendly infrastructure, and sustainability related international cooperation. A third example mentioned by research inquiry partners was Finland's 'Roadmap to the Circular Economy (CE)'⁷⁸. This is a very complex, truly systemic and multi-faceted strategy that utilizes a number of the sustainability drivers discussed here. It rests on a government decision to create laws and regulations that accelerate the transition to a Circular Economy (CE) in Finland, and aim to influence European and global efforts to establish CE as a normative approach to a new economic practice (Ghisellini, Cialani and Ulgiati, 2016). This initiative employed binding laws and regulations and shifts in resource allocation through taxes and funds, but also included

⁷⁸ A more detailed description of the Roadmap can be found in chapter 7.3.2

voluntary regulations, standards, and principles as important levers for transformation.

One example of the role voluntary regulations can play is the OECD guidelines for multinational companies (Ferenschild, 2002). These are government approved non-binding recommendations to multinational corporations on how to operate in a responsible way, support sustainable development, and ensure coherence between social, environmental and economic aspects. They are negotiated at the government level, increasingly in multi-stakeholder dialogues and consultations, and finally approved by governments who commit to promoting the principles and standards in their countries. In some countries, the non-binding guidelines are translated into binding laws to regulate corporate responsibility. Despite their limitations as non-binding recommendations to corporations, they have had a long-term effect. Over years of negotiations, they have influenced companies to act within a non-binding regulatory framework, and spurred the communicative interaction between the public and the private sector at OECD level and in the member countries. They are not exactly an example of accelerated transformation and have been heavily criticized by NGOs as lacking 'teeth' (Dombrowski, 2010; Ferenschild, 2002) and potentially undermining the creation of binding laws. Despite their limitations, they show that non-binding regulations can create enormous peer-group pressure towards implementation of sustainability strategies and can have a gradual effect on changes in thinking and behavior.

The global compact⁷⁹, initiated in 2000 by the United Nations under UN Secretary-General Kofi Annan, intends to encourage corporations and other societal actors such as NGOs or cities to implement ten principles related to environmental action, human rights, and anticorruption (Hayward et al., 2013). The Global Compact's principle-based framework brings all societal stakeholder groups together into policy dialogue, collective learning and collaborative projects. It has more than 100 local networks that function as self-organized, self-governed entities. Often financially supported by government funds, these local networks advance the principles at the national level. Again, the relatively vague and loosely-traced global compact guidelines have been criticized as not transformative enough (Blackett, 2001; Lobel, 2007). But seen through the lens of the challenges in leading transformative change collectively, voluntary regulations like these can have an enormous impact in establishing awareness of the need for sustainability transformation. They also engender networks of action and reflection that provide the ground for accelerated transformation to sustainability. Hence, even voluntary agreements and standards can influence stakeholder interaction.

Leading transformative change collectively goes hand-in-hand with reviewing, reforming, abolishing, or strengthening certain voluntary or binding regulations as well as steering or rearranging resource allocation. In the coffee case example, the growing group of stakeholders voluntarily agreed on drawing more actors into compliance with a co-created and co-designed mainstream basic standard. This was a voluntary social and environmental standard prescribing how to produce coffee in a sustainable way that could be utilized to measure progress towards sustainability. Developing a mainstream

⁷⁹ Source (accessed on 5th April 2017): <https://www.unglobalcompact.org>

coffee standard through stakeholder discourse on appropriate indicators spurred collective learning that led the initiative to reach far beyond the development of a standard. Standards are one form of voluntary regulation, normally limited to a particular product, commodity, or way of operation in a specific context. Not surprisingly, many issue-related voluntary agreements, principles, and guidelines involving non-state actors have emerged in the sustainability arena, in the context of indecisive government actions towards sustainability. These include global equator principles (Wright and Rwabizambuga, 2006) and sustainable seafood and forestry standards (Anders and Caswell, 2009; Higman, 2013), among many others. Although many NGOs criticize their impact as too mediocre (Fuchs, Kalfagianni and Havinga, 2011; Ponte and Cheyins, 2013) they are an indication of emerging capabilities of collective of actors across institutions and societal stakeholder groups to self-organize stewarding entities.

Looking at guiding regulation, laws and balancing resource allocations from the lens of the organizing principles advanced in the emerging ‘patterns of aliveness’ theory, their intention is to advance the principle of **mutually enhancing wholeness**. **Regulations and resource allocations can become enablers of sustainability transformation, if their purpose is to safeguard, maintain, rehabilitate, regenerate or foster ‘patterns of aliveness’**. Regulations and resource allocation influence collective behavior change and represent powerful interventions into human systems interaction. They are needed where *narratives*, *governance systems*, and *metrics* alone do not work, and where *sustainability-oriented innovation* needs to be guided and incentivized. However, their adoption by societal stakeholders requires lengthy negotiations, broad consultation to enhance understanding and ownership, or even the stakeholder-based co-design. Seen through the lens of the emerging ‘patterns of aliveness’ theory, guiding regulations and balancing resource allocations are linked to the **principle of mutually enhancing wholeness**. *Enlivening narratives* (furthering the **principle of intentional generativity** and invigorating the human competency dimension of future possibilities) as well as *governance systems* that invigorate **collective intelligence** (furthering the **principle of contextual interconnectedness**) support the acceptance of changes in resource allocations and the implementation of regulations. They are backed up by the enabler *empowering metrics* (which refer to the **principle of proprioceptive consciousness**), which creates feedback systems and makes transparent current reality and future progress. Regulations work best when they help develop *enabling structures* such as reliable administrative procedures, self-organized stewarding entities, or broad-scale transformation networks.

7.3 Towards a Conceptual Architecture for Large-Scale Transformative Design

This dissertation proposes extending the conceptual framework based on the emerging ‘patterns of aliveness’ theory by matching the enablers elaborated here with the aliveness enhancing organizing principles and the human competency dimensions of the practice model. The purpose of extending the conceptual framework into an overarching conceptual architecture is to inspire transformative change design that encourages multiple actors to

lead transformation to sustainability collectively.

The above brief description of enablers for sustainability transformation shows that stewarding co-evolutionary patterns of aliveness is not an entirely new task, or decisively different from what is happening in the many attempts to accelerate sustainability transformation. Actors who drive transformation may not relate to the emerging 'patterns of aliveness' theory advanced in this dissertation. However, the examples show that a lot of agency towards transformation implicitly aims at furthering aliveness or enlivenment in the form of more functional patterns of socio-ecological and economic systems interactions. Many aspire to achieve the 17 Global Sustainable Development Goals by 2030, despite their deeply entrenched challenges. In this context, a better understanding of leading transformative change collectively, in the form of stewarding co-evolutionary patterns of aliveness, would accelerate what Schneidewind (2013) calls '**transformation literacy**'. **This can be described as the capacity of multiple actors to better understand the features and dynamics of societal change processes and more effectively design transformative change.** It includes the human capacity to collectively identify and shift dysfunctional patterns, and improves the quality of collective sense-making and collective co-creation in ways that it becomes easier to steward co-evolutionary patterns of aliveness.

This dissertation suggests that leading transformative change collectively across sectors, institutions, and nations requires multiple actors to engage in multiple simultaneous efforts for which the pathways cannot be prescribed. As Loorbach (2007) states, "An important insight that stems from ex post analysis of transition management in the context of various transitions is that transitions evolve in different ways and that there thus is no single recipe or blueprint for management of transitions" (p. 279). Given the complexity and multitude of the task, these efforts cannot be controlled or steered. They **need to thrive on dynamics of mutually supportive and interacting self-organization, with a certain degree of multi-level agreements and regulatory guidance.** They can only be partially coordinated, but they can take place in acknowledgement and awareness of other approaches or entry points for transformative change. Moreover, they need to be embedded in a larger framework for global transformation that draws on efforts such as the 17 Global Development Goals, or concepts such as the planetary boundaries, a new definition of the commons, or regulatory approaches to accelerate transformation to a circular economy.

The systems view of life advanced in this dissertation suggests that these efforts must be seen as mutually supportive laboratories for transformation and acknowledge each other as part of a larger transformation system. In this way, they can emerge as **networked patterns of aliveness** that finally will lead to radical incremental change (Goepel, 2016; Westley et al., 2011). The change must be *radical*, because only a decisive re-orientation towards sustainability (here referred to as aliveness patterns) will induce the necessary behavioral changes. The change will be *incremental* in the sense that transformative actions will gradually modify how societies, including the global society, operate through a growing, step-by-step, process that engages more and more actors. **Leading transformative change collectively means that multiple cross-institutional, cross-sector, and cross-national stakeholders steward co-evolutionary patterns of aliveness in multiple interconnected systems and subsystems.** However, transformation

cannot occur if it is removed from individual human beings' feelings, thoughts, and actions. This dissertation has therefore argued that the **core element in leading transformative change collectively is building transformative action on a relational pattern of human competencies** that mirror the aliveness enhancing principles advanced in Chapter 5. Here, the practice model has proven helpful. It implicitly or explicitly anchors transformative actions in six human competency dimensions that relate to the organizing principles and subsequently allow the emergence of 'patterns of aliveness' in human interactions, and in collaborative sustainability initiatives in particular. As the case examples show, invigorating these competencies can accelerate transformative change. However, many necessary changes are complex, occurring within multifaceted socio-ecological systems (Ison, 2014) that span multiple actors, institutions, and issues. Actors who intend to steward co-evolutionary patterns of aliveness in collaboration and complementarity under these conditions need to go beyond well-defined collaboration initiatives. They need to design transformative change in multiple different collectives and connections, and look at how they can best contribute to the larger transformation system. This dissertation therefore suggests integrating the aliveness enhancing principles and the human competency dimensions with the above-elaborated transformation enablers into an overarching conceptual architecture for transformative design in large systems.

7.3.1 From Drivers to Transformation Enablers

The enablers for sustainability transformation presented above are more than drivers or factors. Rather they need to be seen as a pattern of strategy elements, where the different elements support each other. Any of the transformation enablers can become an entry point for leading transformative change collectively. But only, if enablers are combined with other enablers in a patterned relationship, the likelihood of achieving impact increases. The entry point is not fixed. Any of the enablers can be a starting point for transformative change in large systems. Eventually, actors at multiple levels must gradually integrate all enablers to create a pattern more conducive to a dynamic of transformative change. Their interaction with each other and the reciprocity and mutual strengthening that occurs, when they function as a relational pattern, is part and parcel of their effectiveness. In the context of the emerging 'patterns of aliveness' theory, the enablers can be related to the aliveness enhancing principles and the human competency dimensions. In a well-designed patterned relationship the transformation manifest the underlying principles. Thus, the emerging 'patterns of aliveness' theory developed in Chapter 5 provides the background and lens for understanding how leaders as individuals, and collectives of actors, across multiple institutions, even nations, can more consciously design transformative change that invigorates aliveness in large systems. It is argued here that this is at the core of stewarding large systems change.

The coffee supply chain and water resource management case example show that a carefully stewarded process can engage previously ignorant or adverse actors to contribute to *mutually enhancing wholeness*, and to their own and their surroundings' 'patterns of aliveness'. **This dissertation suggests that an accelerated sustainability transformation**

cannot be steered or managed in the same way as the technological, social and economic development that has led to the sustainability challenges humankind now faces. The design of large-scale and small-scale transformation processes needs to mirror the intended outcome – a pattern of aliveness. Perfection is not required, only deep respect and reverence for life's urge for aliveness and humankind's role as a partner of the evolutionary process. This should become the underlying premise for stewarding the human impact on planet Earth back to a thriving evolutionary balance. **More functional enlivening patterns of socio-ecological systems interactions need to be built by connecting numerous emerging fractals of collectively stewarded patterns of aliveness.**

The organizing principles suggested in Chapter 5 translate the notion of aliveness to the realm of understanding enlivening systems change. **The practice model, the Collective Leadership Compass, translates the principles into the task of navigating complex change through invigorating relational human competencies as patterns of aliveness.** Leading large-scale transformative change collectively, however, involves the self-organization of sometimes formally, sometimes informally, and most often very loosely connected multiple actors at multiple levels who know they are part of a larger transformation system. The enablers discussed above, if linked to the human competency dimensions and the aliveness enhancing principles can translate the emerging 'patterns of aliveness' theory into the transformative design of large systems change.

Intellectual and practice communities have developed around most enablers. These communities often advocate for a particular approach in academic and non-academic literature, at conferences, and through exchanges of best practice. The variety of approaches enriches the collective learning journey towards sustainability transformation. However, none of the approaches alone provides the final solution. Regardless of the angle or enabler that provides the initial entry point, leading transformative change collectively as stewarding co-evolutionary patterns of aliveness means co-creating transformative change design at-scale that, eventually, take all the six different enablers into account. There is a need to establish connections between often-circumcised communities of thought, change, or practice. This should not be misunderstood as a request for steering or coordinating, but should rather be seen as encouraging a global learning space for understanding the choreography of patterns that work and patterns that connect. The Cambridge Dictionary defines choreography as "the skill of combining movements into dances to be performed"⁸⁰, which is a good metaphor for the skill of the transformation literacy mentioned earlier. **Collectively stewarding the movement and relational interaction between the six enablers in a way that it accelerates a dynamic of transformative patterns of change can be seen as choreographing a dance of transformation**⁸¹ through multiple iterations and feedback loops.

The enablers, not unlike the aliveness enhancing principles, and the dimensions of human

⁸⁰ Source: <http://dictionary.cambridge.org/dictionary/english/choreography> accessed 4th June 2017

⁸¹ This expression is chosen in acknowledgement of Peter Senge's visionary book *Dance of Change*, (1999)

competencies, support and strengthen each other when more consciously connected. **The six enablers provide meta-level conceptual guidance for designing large-scale change for sustainability transformation. They do not prescribe specific actions, but guide actors to adopt and connect measures and actions that, in the end, invigorate a more alive pattern of socio-ecological interaction.** Agents of sustainability transformation would benefit from such a framework, as it helps orient them in the larger transformation system and guides the design of transformative change in complementarity with multiple approaches. The conceptual framework developed in Chapter 5 can thus be extended into a **conceptual architecture for transformative change design.**⁸² It connects the patterned aliveness enhancing principles with patterned interactions of human competencies and with patterned enablers for transformative change design in large systems. Such a conceptual architecture needs to serve actors by:

- Strengthening actors to understand the current situation and the opportunities for **complementary intervention;**
- Helping actors to see the **patterned relationship between multiple intervention strategies;**
- Guiding them to plan **relational and reciprocal interventions** that further aliveness in socio-ecological systems;
- Furthering their intention to contribute to a larger **transformation system**
- Helping actors to choose their approach and **transformative intervention design in awareness of the larger transformation system;**
- Encouraging them to design **empowering measurements of progress** that encourage the monitoring of set targets within the context of a larger transformation system; and
- Supporting actors to **identify existing competencies and functional patterns** in order to accelerate them.

Such a **conceptual architecture for transformative change design in large-scale systems** might bring human beings back where they belong, into the center of attention and into emotional connection with the interconnected nature of reality. Accelerated transformation will be the work of billions of activists, change agents, game-changers, and ordinary people who invigorate human competencies for leading transformative change collectively. A conceptual architecture cannot do more than bridge between theories of change and practice, between islands of success, and, most importantly, between the rational human need to plan interventions towards sustainability transformation and the emotional human connection to the deeply ingrained urge of life to stay alive. The conceptual architecture can contribute to a pattern shift in thought and action not only by relating the enablers to the human competency dimensions and to the aliveness enhancing principles, but also by invigorating the ‘drivers’ for sustainability transformation identified by the research

⁸² The term ‘architecture’ is chosen here, because of its overarching guiding role in creating a relational space between the six enablers, the six aliveness enhancing principles and the six human competency dimensions.

conversation partners and turning them into true ‘enablers’. This means:

- Creating awareness of the deteriorating effect of narratives that fuel negative path dependencies, and at the same time **crafting stories of possibilities** for a future that works for 100% of humanity and the planet. **Enlivening narratives** could build on the concept of an economy in service of life (Fullerton, 2015). It means embedding enlivening narratives in educational institutions and at all levels of the global society. This would also inspire **sustainability-oriented innovation** at multiple scales.
- Shifting current approaches to measurements away from a focus on rational facts and figures toward identifying a variety of **empowering sustainability transformation metrics**. These should be science- and evidence-based, but also resonate with people and emotionally connect with them. Sustainability metrics, most importantly, need to **empower actors at multiple levels to shift thinking and behavior**. Such metrics need to function as feedback systems for iterative learning and need to be scaled down and translated into the day-to-day reality of different stakeholders. This would also inform **multi-level governance systems** and **guiding regulations**.
- Accelerating multiple forms of collective sense-making and collective co-creation processes, and building on new **multi-level, multi-stakeholder and multi-issue patterned governance** systems, to move the concept of governance away from negotiated compromises toward **co-creative collaboration and learning settings**. This would also spur **sustainability-oriented innovation**, advance **enlivening narratives** and pave the way for more collaborative **enabling structures**.
- Shifting away from current societal and organizational machine-like command-control structures to open up **enabling structures** in **multiple forms of organization that invigorate the human spirit** to connect with their essential force of aliveness and enable them to contribute to sustainability. This also means building transformative networks across institutional structures and fostering experimentation with structures that mirror life processes. This would also inspire social and technological **sustainability-oriented innovation** and patterned **governance systems**.
- Acknowledging the power of **guiding regulations** and resource balancing interventions as well as the role of governments and global bodies in **advancing binding and voluntary frameworks for sustainability transformation**. This also means observing where imbalances of power deteriorate aliveness for certain parts of the global population and taking measures to rebalance access to resources. This would also guide **sustainability-oriented innovation** and supporting **enlivening narratives**.
- Building on the currently emerging innovations, tapping into the potential of bottom-up innovation to **guide human inventiveness** towards **sustainability-oriented innovation**. This also means shifting investments into life-enhancing social and technological advancements, supported by **guiding regulations** and balancing resource allocation, inspired by **enlivening narratives**.

The conceptual architecture presented in Table 16 shows how the proposed enablers for sustainability transformation can become guiding elements of more conscious transformative

design, how they can be seen as manifestations of the underlying aliveness enhancing principles, and how the patterned dimensions of human competencies can become a starting point for designing large-scale change and function as a bridge between principles and transformative design elements. Despite their organization into separate parts of the table, the enablers and their transformative design elements are not distinct components. Rather, they are relational centers of attention in reciprocity, in the sense that they mutually support and strengthen each other. This relational aspect is captured in Fig. 12.

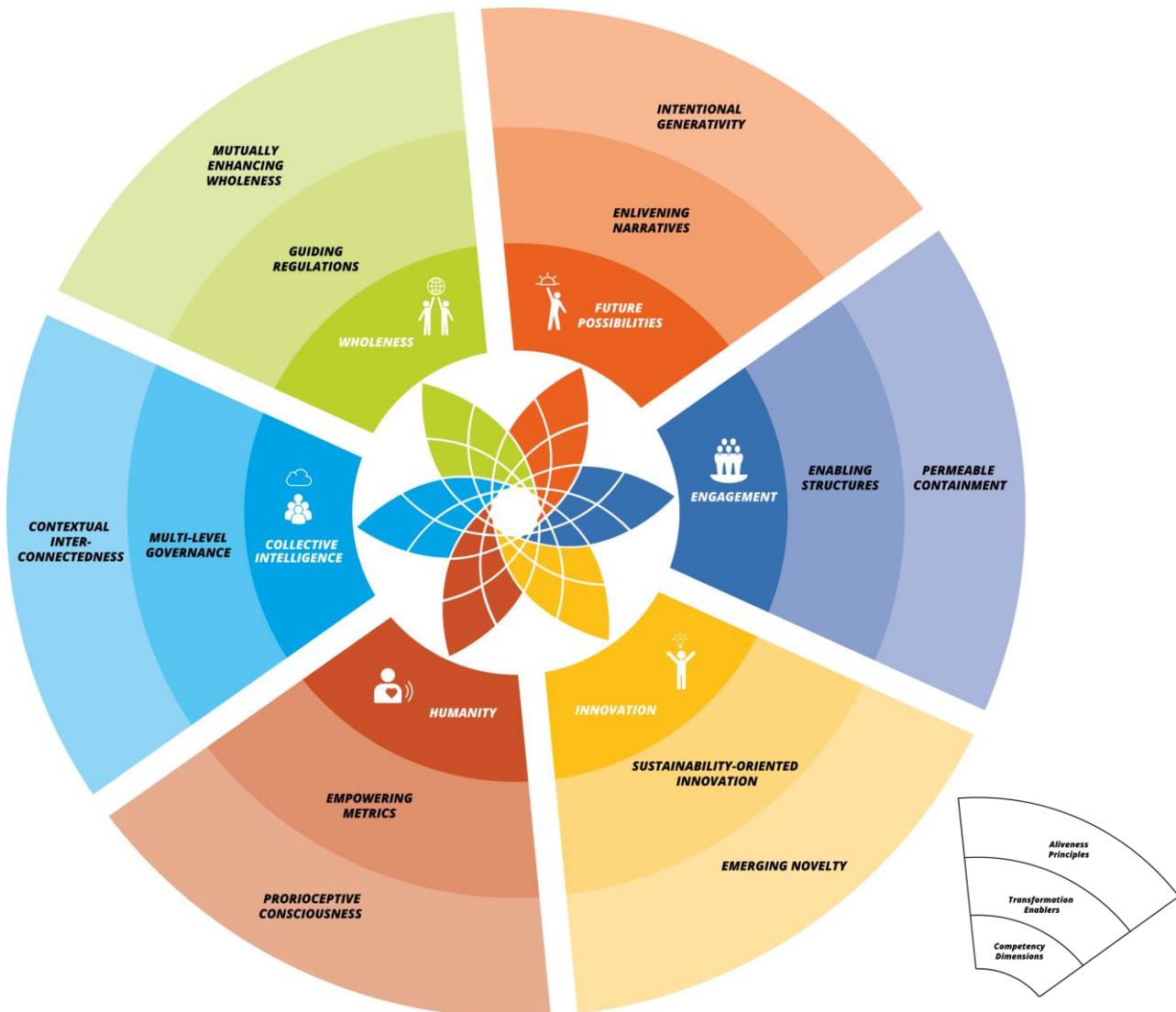


Figure 12: The overarching conceptual architecture for transformative change design⁸³

The purpose of the overarching conceptual architecture can be described as connecting transformative large-scale or systems change design with attention to

⁸³ Source: Collective Leadership Institute; copyright 2017 by Petra Kuenkel

invigorating human competencies, and awareness of the underlying life principles.

More practically, the conceptual architecture could be used to diagnose existing transformation designs or provide meta-guidance for planning systemic change interventions. As the architecture is 'principle-based', it does not prescribe certain action, but may inspire different ways to manifest the underlying principles. The next section illustrates the conceptual architecture with a meta-assessment of a large-scale change strategy – Finland's Roadmap to a Circular Economy.

Table 16: The overarching conceptual architecture for transformative change design

Stewarding systems transformation in co-evolutionary ‘patterns of aliveness’

(Copyright by the author)

Aliveness enhancing principles				
Translation into meta-level guiding tool for transformative change design in stewarding co-evolutionary patterns of aliveness				
Principles and stewarding tasks	Competency dimensions	Transformation enablers	Transformative design elements for large systems change	Aspects for navigating complex change
<p>1. Intentional Generativity</p> <p>In vigorating the human capability to collectively shape future.</p> <p>Stewarding task:</p> <p><i>Envisioning patterns of aliveness</i></p>	<p>1. Future Possibilities</p> <p>Taking responsibility and consciously shaping reality toward a sustainable future.</p>	<p>1. Enlivening Narratives</p> <p>Envisioning thriving socio-ecological systems in an interconnected world.</p>	<p>1.1. Enlivenment perspective</p> <p>Mainstreaming a current and future generation’s enlivenment perspective in both ‘preventing danger’ and ‘co-creating sustainable future’ narratives, combining both; crafting stories of possibilities; ambitious goals setting as transformative guidance.</p>	<p>1.1. Future Orientation</p> <p>Focusing on potential and opportunity; envisioning future and driving change for the envisaged future; enhancing solution-finding; opening to emergent change.</p>
			<p>1.2. Social equity and empowerment</p> <p>Encouraging empowering social equity narratives, showing how everybody can contribute; inspiring solidarity and empowering self-organization of actors to steward sustainable futures at multiple levels; integrating downscaling and up-scaling activities.</p>	<p>1.2. Empowerment</p> <p>Inspiring the connection to a greater cause; enabling or awakening passion for an envisaged future; building on or fostering intention forming; unleashing capacities and potentials for self-organized change; nurturing self-responsibility.</p>
			<p>1.3. Future responsibility</p> <p>Embedding enlivening narratives in international national and local voluntary as well as binding agreements that guide implementation; mainstreaming aliveness/sustainability paradigms; creating focused implementation plans; developing narrative-based roadmaps for transformation; creating monitoring and accountability mechanisms.</p>	<p>1.3. Decisiveness</p> <p>Ensuring execution of agreed action; committing to enactment of change; focusing on tangible outcomes; following-through on implementation; measuring progress.</p>
<p>2. Permeable Containment</p> <p>Engaging the human desire for belonging, identity and meaning-making exchange as</p>	<p>2. Engagement</p> <p>Engaging the human desire for belonging, identity, meaning-making exchange</p>	<p>2. Enabling Structures</p> <p>Creating societal and organizational structures and processes, which</p>	<p>2.1. Procedural consistency</p> <p>Engaging for and embedding the stewarding aliveness tasks in organizational structures and procedures (government, companies, civil society, educational and research institutions); step-by step engagement of all institutional actors.</p>	<p>2.1. Process Quality</p> <p>Building resonance for change through step-by-step and structured engagement of stakeholders while acknowledging existing achievements, procedures and structures.</p>

Aliveness enhancing principles	Translation into meta-level guiding tool for transformative change design in stewarding co-evolutionary patterns of aliveness			
Principles and stewarding tasks	Competency dimensions	Transformation enablers	Transformative design elements for large systems change	Aspects for navigating complex change
well as structured collaboration. Stewarding task: <i>Invigorating and maintaining patterns of aliveness</i>	and structured collaboration.	further meaning-making identities, empowerment and collaboration.	2.2. Transformation networks Fostering multi-issue, multi-level, local to international, cross-sector, multi-stakeholder transformation networks that steward issue-related change.	2.2. Connectivity Building relationships to all relevant stakeholders; fostering identification with the collaboration system for transformative change; ensuring cohesion of activities, building a community for change; leveraging network connections.
			2.3. Collective stewarding entities Co-creating multiple collaborative stewarding entities that foster a sense of belonging to peer groups of pioneers for a thriving sustainable future; incentivizing transformative change of organizations; identity creation.	2.3. Collective Action Fostering agreements and consensus-building; cultivating ownership by honoring tangible contributions to change; focusing on jointly achievable outcomes and shared value creation; enhancing collective responsibility for impact; driving joint implementation and delivery of results.
3. Emerging Novelty Building on the human desire to venture into the unknown and create new pathways. Stewarding task: <i>Generating and co-designing patterns of aliveness</i>	3. Innovation Creating novelty and finding intelligent solutions.	3. Sustainability-oriented innovation Providing space and support for social, scientific and technological innovations that accelerate transformation to sustainability.	3.1 Enabling spaces for transformative ideas Fostering multiple forms and opportunities for incentivizing creative social and technological innovation for sustainable futures.	3.1 Creativity Nourishing sources of creative energy and fostering collective generation of ideas; cultivating inventiveness; encourage creative solution-finding and a learning from mistakes culture.
			3.2 Continuous improvement Encouraging continuous improvement processes with rewards, exchange of good practices, and knowledge networks.	3.2 Excellence Pursuing mastery and high quality delivery; continuously growing knowledge and integrating new expertise; fostering continuous improvement.
			3.3 Adaptation mechanisms Establishing multiple forms of complaint and feedback mechanisms for accelerating adaptation and transformation.	3.3 Agility Moving through crises and turning them into opportunities; staying open to change and cultivating risk taking; spotting and

Aliveness enhancing principles	Translation into meta-level guiding tool for transformative change design in stewarding co-evolutionary patterns of aliveness			
Principles and stewarding tasks	Competency dimensions	Transformation enablers	Transformative design elements for large systems change	Aspects for navigating complex change
				fostering emergent opportunities; nurturing self-responsibility; fostering adaptability to new situations.
<p>4. Contextual Interconnectedness</p> <p>Leveraging the human capability to thrive on diversity and act in networks of networks in dialogue.</p> <p>Stewarding task:</p> <p><i>Negotiating and co-creating patterns of aliveness</i></p>	<p>4. Collective intelligence</p> <p>Using network building and dialogue to harvest difference for progress and leverage multiplicity for transformation.</p>	<p>4. Multi-level Governance</p> <p>Enhance and negotiating multi-issue, multi-level and multi-stakeholder aliveness patterns while balancing individual, collective and global interests.</p>	<p>4.1. Multi-level consultation</p> <p>Furthering multi-level stakeholder consultation and conversational spaces that integrate top-down and bottom-up transformative processes.</p> <p>4.2. Issue-based multi-stakeholder collaboration</p> <p>Implementing change towards sustainability in multiple forms of collaboration across societal sectors; operating in complementary and collaborative initiatives for transformation.</p> <p>4.3. Peer review and learning mechanisms</p> <p>Establishing issue-based or level-related peer-review and collective learning mechanisms (locally, regionally, nationally, internationally).</p>	<p>4.1. Dialogic quality</p> <p>Attending to the structure and quality of conversations; awareness of fruitful communication patterns; listening before reacting and suspending judgment; creating structures for constructive stakeholder dialogues; enhancing meaningful conversations; balancing advocacy and inquiry.</p> <p>4.2. Diversity</p> <p>Fostering diversity in thought, viewpoints, background, and experiences; driving multiplicity of change approaches; respecting differences and encouraging varied perspectives; operating in a complementary and collaborative approach; integrating different perspectives and managing conflicts constructively; seeing opposition as corrective intention.</p> <p>4.3. Iterative learning</p> <p>Developing cycles of reflection into action; creating collective learning spaces; establishing feedback mechanisms; ensuring collective input into stock-taking, situational diagnose and progress evaluation.</p>

Aliveness enhancing principles	Translation into meta-level guiding tool for transformative change design in stewarding co-evolutionary patterns of aliveness			
Principles and stewarding tasks	Competency dimensions	Transformation enablers	Transformative design elements for large systems change	Aspects for navigating complex change
<p>5. Mutually Consistent Wholeness</p> <p>Tapping into the human capability to sense wholeness, as well as engage with a bigger picture, the larger story, and the greater system.</p> <p>Stewarding task:</p> <p><i>Safeguarding patterns of aliveness</i></p>	<p>5. Wholeness</p> <p>Staying connected to and acting in accordance with the common good and a larger change system.</p>	<p>5. Guiding Regulations</p> <p>Co-creating binding and voluntary regulations, reporting rules and ensuring balancing resource allocations that safeguard the interests of individual and the interest of the whole.</p>	<p>5.1. Global to local regulatory frameworks</p> <p>Advancing regulatory frameworks for sustainability and embedding laws, regulations, and binding standards in relation to larger transformation system.</p>	<p>5.1. Contextuality</p> <p>Taking a systemic view, relating to and exploring the larger context and planning action accordingly; actively exploring trends and developments; gaining perspective, seeing a broader picture; designing multi-level interventions; being responsive to the needs of the larger whole – the organization, cooperation system, society, the world.</p>
			<p>5.2. Voluntary standards and regulations</p> <p>Furthering voluntary standards and guidelines and using peer group pressure, disclosure and reporting mechanisms to accelerate implementation.</p>	<p>5.2. Mutual Support</p> <p>Build on and enhance one another's strengths; supporting each other in driving change; taking a complementary approach to allocating responsibilities; ensuring appreciative approaches to managing change.</p>
			<p>5.3. Resource allocation and commons</p> <p>Embedding the stewarding aliveness focus in resource allocation criteria and mechanisms; acknowledging the importance of the commons and global public goods; regularly reviewing impact of resource allocation to commons and social equity.</p>	<p>5.3. Contribution</p> <p>Clarifying and refining individual and system contribution to sustainability; setting-up and evaluating collective impact strategies; utilizing assets and resources in the best possible way; focusing on the connection to the common good.</p>
<p>6. Proprioceptive Consciousness</p> <p>Raising the human capability for reflection in action and the respect for the integrity of all life.</p>	<p>6. Humanity</p> <p>Reaching into one another's humanness and balancing different requirements.</p>	<p>6. Empowering Metrics</p> <p>Co-developing metrics, rankings, incentives, measurements, and transparency</p>	<p>6.1 Transparency</p> <p>Developing multiple forms of metrics measuring threats as well as progress to sustainability; mainstreaming attention to sustainability issues; furthering multiple forms of reporting and disclosure mechanism related to sustainability.</p>	<p>6.1 Mindfulness</p> <p>Deepening awareness of reality; fostering self and collective reflection; cultivating the connection to the planet and all manifestations of life; reflecting while acting; evaluating experience; looking beyond surface reality; attending to human</p>

Aliveness enhancing principles	Translation into meta-level guiding tool for transformative change design in stewarding co-evolutionary patterns of aliveness			
Principles and stewarding tasks	Competency dimensions	Transformation enablers	Transformative design elements for large systems change	Aspects for navigating complex change
<p>Stewarding task:</p> <p><i>Identifying and staying aware of patterns of aliveness</i></p>		<p>rules that inform feedback systems and increase peer pressure for accelerating behavioral change.</p>		<p>encounter and meaningful engagement; mastering the mind.</p>
			<p>6.2 Balancing feedback systems</p> <p>Further developing multiple approaches to sustainability metrics that resemble the 'aliveness' proposition in its various dimensions; consolidating metrics into measurable and understandable sets of data that emotionally inspire action.</p>	<p>6.2 Balance</p> <p>Integrating personal and professional aspirations; attending to needs for renewal; balancing different requirements, needs and interests; finding personal and operational rhythms of effectiveness; balancing attention to relationships and to issues; balancing; balancing commitment, reflection and renewal.</p>
			<p>6.3 Collective value</p> <p>Furthering a sense of pro-active contribution to and responsibility for sustainable futures, supported by qualitative and quantitative data gathering, feedback systems and metrics.</p>	<p>6.3 Empathy</p> <p>Embracing the perspective of others and opening gateways for reconciliation; attending to the quality of listening in conversations; exploring coherence in difficult to understand situations; inquiring into misunderstandings; enhancing meaningful conversations.</p>

7.3.2 Illustrating the Conceptual Architecture

Finland's Roadmap to a Circular Economy

The multi-faceted Finnish Roadmap to a Circular Economy provides an interesting example for illustrating the application and purpose of the **conceptual architecture for transformative design in large systems change**. The roadmap was not developed using this conceptual architecture or with reference to the emerging 'patterns of aliveness' theory, but it demonstrates how these concepts might be applied in the real world.

The following meta-assessment is based on a written document: "Leading the Cycle - Finnish Roadmap to a Circular Economy 2016–2025" (SITRA, 2016). The document was chosen for three reasons: *First*, it displays a thorough commitment to systemic change as well as radical transitions. *Second*, it is grounded in reflections about leadership in complex adaptive systems (Doz, Hellström, Kosonen, Lähdemäki and Wilson, 2017; Hellström and Kosonen, 2016). *Third*, it attempts to advance multi-level change with multiple actors towards an ambitious goal. All three reasons relate to this dissertation's central argument: *leading transformative change collectively requires the stewarding of co-evolutionary patterns of aliveness by multiple actors*. In a reflection about leadership in complex settings, Doz et al. (2017) state:

Wicked problems can only be addressed through consistent collective efforts and sustained well-coordinated action over time. Navigating complexity requires therefore mechanisms of **collaborative governance and leadership** that can support the co-evolution of multiple, mutually reinforcing activities in public, private and third sector organizations. Collaborative leadership brings different stakeholders together to address a common problem in a dialogical process. It can thus help to overcome defensive self-interests by giving responsibility to several actors for achieving collective improvement. (p. 7).

This reflection on the challenges of leading complex change comes from a workshop conducted by the Finnish Innovation Fund (SITRA)⁸⁴, an organization aiming at societal change towards sustainable well-being. The same organization facilitated the development of the Roadmap to a Circular Economy. Even with no reference to 'aliveness' as a core theme of the transition to a Circular Economy, a systems view can be seen in the design of the roadmap. The roadmap strives to move Finland from an adopter of the Circular Economy approach to a driver and implementer of global change towards it (SITRA, 2016).

The Circular Economy approach is based on a safe-guarding concept that is modeled around natural cyclical processes and ensures that production and consumption create as little loss and waste as possible. Its goal is efficient use of materials and resources, furthering environmental and social sustainability. The roadmap describes complex, decisive implementation plans to accelerate the country's transition to a Circular Economy in the context of sustained economic growth, increased well-being, and protection of natural

⁸⁴ The Finnish Innovation Fund (SITRA) is an independent public foundation. It is directly supervised by the Finnish Parliament. Source (accessed on 3rd April 2017): <https://www.sitra.fi/en/>

resources. It was developed in the context of increasing unemployment in Finland, with the expectation that a transition to a Circular Economy would create new jobs and increase exports (SITRA, 2016). The ambitious goal of the Finnish government is that Finland will be a global leader of the Circular Economy approach by 2025. The initiative to develop the roadmap was launched in Spring 2016, and a roadmap was achieved in less than a year, with substantial stakeholder consultation. This dissertation cannot assess how these consultation processes took place, or their quality and depth of engagement. However, this example illustrates the extent to which the conceptual architecture proposed here captures a sufficiently wide array of systemic and complementary actions.

The roadmap provides an interesting case study. Stakeholder consultations and research on best practices and potential leverage areas led the roadmap to focus on five areas. These areas are not separate; they represent an interlinked pattern of activities that could function as fractals for the expected change and for which synergies could be leveraged. These five areas are expected to create a snowball effect for additional activities and thus accelerate the transition (Sitra Studies 121, 2016, p. 13). The five focus areas are:

- A **sustainable food system**, in which consumers prefer food sustainably produced, with substantially lower emissions and resource consumption, from primary agricultural production;
- **Forest-based loops**, in which forestry-related products are used more efficiently and with less pressure on increasing wood production;
- **Technical loops**, which ensure minimal use of raw material and extend the life-span of products or provide reuse opportunities;
- **Transport and logistics**, which provide fossil-free mobility services and reduce the use of private cars; and
- **Common action** that accelerates collaboration between different societal stakeholders to achieve systems change.

For each of the focus areas, the roadmap specifies a process architecture combining policy actions, key collaboration projects, and implementation pilot projects. A steering group composed of different stakeholders meets regularly to evaluate progress and make suggestions for reflective adaptation of the roadmap. While there is little mention of participation of NGOs, the roadmap emphasizes collaboration between different government departments and between government and other societal stakeholders, with emphasis on private sector.

For the purpose of the meta-assessment illustrating the conceptual architecture the different strategies, principles, and action plans described in the roadmap document have been allocated to the transformation enablers, and more specifically to matching design elements inspired by the aspects of the Collective Leadership Compass. The meta-assessment does not assess the quality, validity or even the feasibility of the roadmap. Instead, it reveals that, to different degrees, the document attends to all the six identified enablers of sustainability transformation.

The roadmap most prominently advances the combination of **guiding regulations** and

sustainability-oriented innovation. These are closely connected with a **narrative** that does not necessarily focus on enlivenment, but on a more competitive, yet emotional connection to Finland becoming a world leader in the Circular Economy, and to the promise of future possibilities of sustained economic growth. A tight and detailed plan is proposed to bring the narrative into reality. Well-being is one expected result. The empowerment of citizens to drive transformation in self-organized communities of change is not in the forefront, but expected to be triggered by the new paradigm. The focus regarding **sustainability-oriented innovation** is clearly on the private sector and on technological innovation in various projects and pilots. Social innovation is not in the forefront. Discussion of guiding regulations focuses on laws and tax incentives that spur the transition on the one hand, and on the other hand a desire to influence the European and global agenda towards an accelerated adoption of the Circular Economy approach.

Multi-level, multi-issue and multi-stakeholder governance is mirrored in the stakeholder-composed steering group, the consultation for developing the roadmap, and the various networks of actors that come together to implement the roadmap. It is not clear how far these bodies can reach and how the broader citizenship is actively engaged in driving the transition. **Metric**s play a role, as the roadmap mentions monitoring key progress indicators. It is difficult to assess the extent to which these metrics can empower different levels of the society and different actors. Apart from a mention of networks and open innovation, and an annual meeting of all stakeholders, it is also difficult to assess how much the roadmap envisages changes in societal or organizational **structures**, or fosters experiments with new structures.

A deeper analysis is beyond the scope of this dissertation, but would be a useful focus of future research. The meta-assessment so far shows that the roadmap touches on all transformation enablers at least to some degree. The **conceptual architecture for transformative change design** suggests that even a systemic and multi-faceted strategy like the roadmap to a Circular Economy could be improved, so that it becomes a fractal for ‘patterns of aliveness’. The most obvious question is whether the competitive narrative will speak to the majority of the stakeholders and citizens, or if a more enlivening narrative would help to support or even accelerate the ambitious transition. Table 17 shows the meta-assessment of the roadmap in relation to the transformation enablers and the transformative design elements suggested. Fig.13 illustrates this graphically.

Table 17: Illustrating the conceptual architecture - Finland's Roadmap to a CE
(Created by the author)

Transformation enablers	Transformative design elements for large systems change	Application to Finland's Roadmap to a Circular Economy (Source: SITRA, 2016)
<p>1. Enlivening Narratives</p> <p>Envisioning thriving socio-ecological systems in an interconnected world.</p>	<p>1.1. Enlivenment perspective</p> <p>Mainstreaming a current and future generation's enlivenment perspective in both 'preventing danger' and 'co-creating sustainable future' narratives, combining both; crafting stories of</p>	<p><i>The Finnish Roadmap to a Circular Economy acknowledges the importance of ambitious goals and mindset shifts (p.10). The narrative is built on competitive images (pioneer, world leader in CE, p.10 and 11) and on market goals (driver of growth, investment and export, p.11) backed by research and metrics. It acknowledges the complexity of the task, and the urgent need to transition towards sustainable</i></p>

Transformation enablers	Transformative design elements for large systems change	Application to Finland’s Roadmap to a Circular Economy (Source: SITRA, 2016)
	possibilities; ambitious goals setting as transformative guidance.	<i>economic models. Although biased more towards technical solutions, it crafts stories of possibilities and uses an ambitious goal (transition to CE by 2025) as guidance.</i>
	<p>1.2. Social equity and empowerment</p> <p>Encouraging empowering social equity narratives, showing how everybody can contribute; inspiring solidarity and empowering self-organization of actors to steward sustainable futures at multiple levels; integrating downscaling and up-scaling activities.</p>	<i>The Roadmap does not specifically refer to balancing societal power and inequities. Some sections refer to the opportunities of citizens in adopting and furthering the roadmap’s intention (e.g. by becoming more aware of the need for food ecosystems and sustainable mobility, see p. 14 and p. 24).</i>
	<p>1.3. Future responsibility</p> <p>Embedding enlivening narratives in international national and local voluntary as well as binding agreements that guide implementation; mainstreaming aliveness/sustainability paradigms; creating focused implementation plans; developing narrative-based roadmaps for transformation; creating monitoring and accountability mechanisms.</p>	<i>The Roadmap focuses on 5 areas with potential for leverage: sustainable food system, forest-based loops, technical loops, transport and logistics, common action (p. 10). Each focus area is captured in detailed implementation plans showing policy actions, key projects, and pilots. It is intended to monitor progress on a regular base (p.10).</i>
<p>2. Enabling Structures</p> <p>Creating societal and organizational structures and processes, which further meaning-making identities, empowerment and collaboration.</p>	<p>2.1. Procedural consistency</p> <p>Engaging for and embedding the stewarding aliveness tasks in organizational structures and procedures (government, companies, civil society, educational and research institutions); step-by step engagement of all institutional actors.</p>	<i>The Roadmap mentions a new role of government as a facilitator of integrated transformation processes (p. 10). The architecture of policy actions, key projects and pilots can be seen as an attempt to integrate top-down and bottom-up processes.</i>
	<p>2.2. Transformation networks</p> <p>Fostering multi-issue, multi-level, local to international, cross-sector, multi-stakeholder transformation networks that steward issue-related change.</p>	<i>The Roadmap mentions the need for working in networks and complementary activities as well as the need to coordinate various different efforts (p.7). It also mentions that innovative pilot projects will be connected for mutual learning (p. 20-22). It makes a specific note on the need for creating synergies across government department silos and integrating existing strategies such as the natural resources strategy, energy and climate strategies, bio-economy strategies (p. 31). The CE roadmap is seen as a potentially integrative strategy where different ministries share responsibilities (p.31).</i>
	<p>2.3. Collective stewarding entities</p> <p>Co-creating multiple collaborative stewarding entities that foster a sense of belonging to peer groups of pioneers for a thriving sustainable future; incentivizing transformative change of</p>	<i>The Finnish Innovation Fund (SITRA), which is facilitating stakeholder consultations and the development of the Roadmap (p.6), will also be a backbone organization in stewarding the implementation. Identity creation and a sense of belonging that would spur collective action are mainly related to the ambitious and competitive goal. A steering group exists, and all organizations involved</i>

Transformation enablers	Transformative design elements for large systems change	Application to Finland's Roadmap to a Circular Economy (Source: SITRA, 2016)
	organizations; identity creation.	<i>will meet once a year.</i>
<p>3. Sustainability-oriented innovation</p> <p>Providing space and support for social, scientific and technological innovations that accelerate transformation to sustainability.</p>	<p>3.1 Enabling spaces for transformative ideas</p> <p>Fostering multiple forms and opportunities for incentivizing creative social and technological innovation for sustainable futures.</p>	<p><i>The Roadmap heavily emphasizes innovation in the form of key projects and pilots that have been created on the basis of stakeholder consultations (p.6) involving cities and municipalities as well as experts from companies and various institutions. Focus is on concrete and rapidly to be implemented solutions (p.7) as well as dissemination of innovative solutions through pilots (p.14), demonstration (p.19) and innovation platforms (p.23).</i></p>
	<p>3.2 Continuous improvement</p> <p>Encouraging continuous improvement processes with rewards, exchange of good practices, and knowledge networks.</p>	<p><i>The Roadmap describes pilot projects as laboratories for advancing the CE (p.6and7), often based on existing best practices.</i></p>
	<p>3.3 Adaptation mechanisms</p> <p>Establishing multiple forms of complaint and feedback mechanisms for accelerating adaptation and transformation.</p>	<p><i>Regular evaluation of the Roadmap projects and updating of the activities is suggested (p.9). The Roadmap notes that the transition to a CE requires high level political action in conjunction with agile pilots (p.9) that have the potential for scaling up.</i></p>
<p>4. Multi-level Governance</p> <p>Enhance and negotiating multi-issue, multi-level and multi-stakeholder aliveness patterns while balancing individual, collective and global interests.</p>	<p>4.1. Multi-level consultation</p> <p>Furthering multi-level stakeholder consultation and conversational spaces that integrate top-down and bottom-up transformative processes.</p>	<p><i>The Roadmap has been developed in an open process with broad stakeholder engagement (p.6), bringing together over 1,000 participants in stakeholder events (p.7). It is acknowledged that systemic change such as the transition to CE requires participation from the entire society across sectorial and industry boundaries (p.13). Not specifically mention in the roadmap is the participation and role of civil society.</i></p>
	<p>4.2. Issue-based multi-stakeholder collaboration</p> <p>Implementing change towards sustainability in multiple forms of collaboration across societal sectors; operating in complementary and collaborative initiatives for transformation.</p>	<p><i>The Roadmap states that public-private partnerships (PPP) as well as cooperation with the so-called third sector is seen as important (p.11), but does not specify the details. Overall the CE roadmap can be seen as a complex collaboration initiative with focus on collaboration between government and private sector.</i></p>
	<p>4.3. Peer review and learning mechanisms</p> <p>Establishing issue-based or level-related peer-review and collective learning mechanisms (locally, regionally, nationally, internationally).</p>	<p><i>The Roadmap has established a steering group, which will meet 2 to 4 times per year to review progress and discuss the future direction (p.35). Additionally, all organizations involved in the roadmap, including key stakeholders, will meet once a year to review progress and renew the future implementation pathways (p.35).</i></p>
<p>5. Guiding Regulations</p> <p>Co-creating binding and voluntary regulations, reporting rules and</p>	<p>5.1. Global to local regulatory frameworks</p> <p>Advancing regulatory frameworks for sustainability and embedding laws, regulations, and binding standards in relation to larger</p>	<p><i>The Roadmap has a strong emphasis on regulations and balancing resource allocations. This relates to legislative changes that have been identified as important to advance CE (p.14). The Roadmap also suggests to influence the EU political landscape towards CE as well as more detailed regulations (such as an EU fertilizer regulations, p.15). It also suggests</i></p>

Transformation enablers	Transformative design elements for large systems change	Application to Finland’s Roadmap to a Circular Economy (Source: SITRA, 2016)
<p>ensuring balancing resource allocations that safeguard the interests of individual and the interest of the whole.</p>	<p>transformation system.</p>	<p><i>development of laws in the country that accelerate the transition to CE (such as food waste laws. It encourages policy instruments and incentives to accelerate a rapid change towards a CE (e.g. the transition to mobility service instead of privately-owned cars by reducing subsidies, p.26).</i></p>
	<p>5.2. Voluntary standards and regulations Furthering voluntary standards and guidelines and using peer group pressure, disclosure and reporting mechanisms to accelerate implementation.</p>	<p><i>The Roadmap does not specifically mention the voluntary standards, but mentions the guiding principles of the roadmap as means to provide direction for the overall transition to a CE (p.19). It suggests that actions will be assessed in relation to the principles.</i></p>
	<p>5.3. Resource allocation and commons Embedding the stewarding aliveness focus in resource allocation criteria and mechanisms; acknowledging the importance of the commons and global public goods; regularly reviewing impact of resource allocation to commons and social equity.</p>	<p><i>The Roadmap suggests that the CE approach will be taken into account when determining policy instruments for social actions (p.11), but does not specify what this means. It mentions that public funding mechanisms will focus on projects that implement CE approaches (p.30). The transition will also be accompanied by risk financing, collateral financing, and investment subsidy arrangements that support CE (p.30). Also, tax guidance methods will take CE into account (p.31). Resource allocation and tax instruments will be employed to terminate fossil fuels for private cars by 2040 (p.31).</i></p>
<p>6. Empowering Metrics Co-developing metrics, rankings, incentives, measurements, and transparency rules that inform feedback systems and increase peer pressure for accelerating behavioral change.</p>	<p>6.1 Transparency Developing multiple forms of metrics measuring threats as well as progress to sustainability; mainstreaming attention to sustainability issues; furthering multiple forms of reporting and disclosure mechanism related to sustainability.</p>	<p><i>The Roadmap is based on research that shows that the transformation to sustainable economies is inevitable. It acknowledges that the transition requires wide-spread mindset changes. It does not provide details on further sustainability metrics. It does not provide information on how citizens are informed or involved in measuring progress.</i></p>
	<p>6.2 Balancing feedback systems Further developing multiple approaches to sustainability metrics that resemble the ‘aliveness’ proposition in its various dimensions; consolidating metrics into measurable and understandable sets of data that emotionally inspire action.</p>	<p><i>The Roadmap impact and progress will be measured against competitiveness, growth and jobs. The roadmap does not specify any relations to other sustainability metrics. The Roadmap claims to balance economic, social and environmental values into consideration (p.10).</i></p>
	<p>6.3 Collective value Furthering a sense of pro-active contribution to and responsibility for sustainable futures, supported by qualitative and quantitative data gathering, feedback systems and metrics.</p>	<p><i>The Roadmap suggests environmental benefits, an improved state of the environment as well as economic growth as a result (p.11). It assumes that citizens’ awareness of the potential of CE will increase and lead to a revival of domestic markets.</i></p>



Figure 13: Summary of meta-assessment⁸⁵

7.4 Conclusions: Human Agency for Stewarding ‘Patterns of Aliveness’

The aliveness enhancing principles suggested in Chapter 5 and the human competency dimensions of the Collective Leadership Compass can be translated into a pattern of transformative design elements for large-scale systems change. The metaphor of a compass suggests that the practice model is an orientation, not a prescriptive tool or even a roadmap to collaborative change. The latter needs to be designed in a co-creative process. Similarly, the meta-level conceptual architecture for transformative change design is not prescriptive, but can function as an orientation that helps actors notice at which point they might improve a pattern of change interventions. How these strategies manifest, and the detailed roadmap of change that emerges, depend on the context and complexity of the particular case. Like designing collaborative change in multi-actor settings, such a roadmap usually functions best when it has been co-created by all relevant stakeholders, based on a collective sense-making phase during which these actors discern the patterns that work and those that need

⁸⁵ Source: Collective Leadership Institute; copyright 2017 by Petra Kuenkel

to be shifted. The meta-assessment of the Finnish Roadmap to a Circular Economy document showed that the design elements informing the six different, but interrelated, transformation enablers are comprehensive enough to deal with the complexity of a large-systems change strategy. Looking at the Roadmap through the lens of the conceptual architecture for transformative change design revealed that the strategy touched all the central elements, but the meta-assessment also identified areas for improvement. It would be interesting to use the conceptual architecture to reassess the strategy a few years into its implementation.

In response to Research Question Four, this chapter integrated the living systems features, the experiences from complex multi-stakeholder collaboration, and the evaluation of narrative interviews with transformation leaders into a conceptual architecture for transformative change design in support of actors who need to lead large system change collectively. This chapter suggests the following conclusions:

- Core aspects of the partly disconnected science and practitioner discourses around global sustainability transformation discourse can be traced back to the emerging 'patterns of aliveness' theory.
- Using the six aliveness enhancing principles as an analytic lens for understanding drivers of transformation helped to suggest slight shifts in the way these drivers were perceived and applied. These could be reframed as sustainability transformation **enablers**, following the logic of the emerging 'patterns of aliveness' theory.
- The dimensions of human competencies in the practice model connect the conceptual architecture for transformative change design and the aliveness enhancing organizing principles. This illustrates the important role of invigorating the human competencies to lead transformative change collectively.

Only the 'culprit,' who caused the sustainability challenges – humankind as a whole - can reverse the process and the negative path dependencies. However, not only evolutionary life processes, but also human agency needs to be better understood regarding the urge to drive the future towards increasing aliveness. Tapping into this urge while introducing the awareness of global responsibility creates important leverage for sustainability transformation. It invigorates the principle of **intentional generativity** in close relational interaction with all other principles. **If stewarding co-evolutionary patterns of aliveness became a metaphor for the complex task of leading transformative change toward sustainability collectively, the current misunderstanding of sustainability as compliance and constraints could be transformed towards a mind-set of contribution to a thriving planetary future.**

Chapter 8:

8 Synopsis and Suggestions for Further Research

Toward a More Effective Choreography of Stewarding Transformative Change Collectively

The previous chapters have argued for translating the proposition that life operates in *patterns of aliveness* into the human realm of leading transformative change collectively. This could contribute to Meadows' (1999) call for a paradigm shift as a high-level leverage point for sustainability transformation, and Rockström et al.'s (2009) demand for a much-needed shift in human mindset in a responsible Anthropocene. The last 20 years have seen enormous progress in advocacy against natural assets depletion, in regulations on environmental protection, in new models of coexistence of culture and nature, and in the emerging discourse about a new and radically different economy in service of life (Hawken, Lovins and Lovins, 1999; Fullerton, 2015). But still, human consumption of the very biosphere on which it depends remains an intractable problem (Weber, 2016). In the Anthropocene (Steffen et al., 2007) human-induced changes are having an increasing impact on the geo- and biosphere. This requires a faster paradigm shift toward recognizing human agency and responsibility for collectively stewarding socio-ecological interactions to maintain the delicate balance of the human-Earth system. The emerging 'patterns of aliveness' theory advanced in Chapter 5 and captured in the conceptual architecture for transformative change design in Chapter 7 is crucial, in that it opens new ways to conceptualize collective behavior change not so much as a matter of restrictions and constraints, but as a form of invigorating the human potential to shape future in a much more conscious way.

Adopting the urge for aliveness as an organizing principle of all life and as a premise for approaching sustainability transformation makes actors in transformative change *partners of evolution*. Using the emerging 'patterns of aliveness' theory to integrate a non-linear and systemic foundation with the linear demands of planning and managing transformative change represents one pathway to accelerating sustainability transformation. Contributing to a 'thriving with aliveness' planet with a thriving humanity, then, is less a skill to be acquired than a competency to be unearthed and lived. Leading transformative change collectively as a form of stewarding co-evolutionary patterns of aliveness is a learning journey that can (and probably will) take place at all levels of the global society. It is important to remember the insight from living systems theory that learning (individually and collectively) takes place most profoundly 'at the edge of chaos' (Anderson, 1999; Kauffman, 1996, 2016). If this is correct, then the current endangered state of the world can be reframed as an opportunity. Even disabling structures, misguided or weak regulations, and obsolete metrics can be overcome, once we choose to take care of socio-ecological systems in a much more responsible way.

Guided by new narratives of possibilities, stakeholders at different levels of the global society may begin to drive sustainability-oriented innovations and form new governance systems

where governments or existing dysfunctional governance systems fail. One very recent example of this kind of collaboration as ‘the new normal’ is the open letter to the international community and parties to the Paris agreement by more than 1000 US mayors, states, attorney, educational institutions and well-established corporations. This letter declared their commitment to mitigating climate change despite an international policy move by the US president in 2017 to withdraw from the internationally negotiated Paris agreement⁸⁶. It shows that alliances can be formed around sustainability communities that span societal sectors, engendered by global responsibility. This confirms the underlying argument of this dissertation that human agency can shift thought and action towards sustainability transformation.

It has been argued that leading transformative change collectively needs to build on human competencies to navigate complexity, and invigorate existing competencies to co-create, maintain, steward, or rehabilitate ‘patterns of aliveness’. This is a crucial element, as it suggests moving from focusing on human deficits to acknowledging and enhancing human competencies. If the principles that give rise to ‘patterns of aliveness’ identified here are correct, **leading transformative change collectively is not one competency, but a set of competencies in interaction. If enacted, each principle invigorates others, and all spread to enhance aliveness in human systems.** These competencies in interaction need to be reflected in the way transformative change is stewarded.

This dissertation has taken as its starting point the practice model of the Collective Leadership Compass for navigating complex change in multi-actor settings. It has developed a multidisciplinary research approach that moves between exploration of theory and reflection on practice. Based on transdisciplinary literature that develops a systems view of life and reflections on various sustainability discourses, it showed how the patterned structure of human competency dimensions articulated by the practice model are anchored in six aliveness enhancing organizing principles. It further developed this structure by identifying success factors for multi-stakeholder collaboration related to the principles, and finally a conceptual architecture for large-scale transformative change design. In doing so, it addressed the main research question:

- *How can the practice model of the Collective Leadership Compass be systematically anchored in a systems view, and can new insights from systems thinking and recent advances in the global transformation discourse, along with a narrative inquiry into the experience of transformation leaders, be incorporated into the model in order to develop it further towards a conceptual architecture for collectively leading large scale transformative change towards sustainability?*

Synopsis

The dissertation showed that it was possible to anchor the practice model in a systemic background, which also provides the basis for the emerging ‘patterns of aliveness’ theory and a conceptual framework with six aliveness enhancing organizing principles developed here. The model, theory, and principles serve as the conceptual foundation for leading

⁸⁶ Source accessed on 15th August 2017: <http://wearestillin.com>.

transformative change collectively in the form of stewarding co-evolutionary 'patterns of aliveness'. On this foundation, a meta-level conceptual architecture for large system transformative change design was developed. It is suggested that this could potentially guide the planning, implementation, and evaluation of transformation initiatives for sustainability in the context of the global Sustainable Development Goals.

Chapter 3 examined the current sustainability discourse and framed the global transformation around the 17 Sustainable Development Goals as a collective leadership challenge in complex and interconnected systems. It showed how systemic thinking led leadership to be conceptualized as including collectives of actors in their relational interaction as agency for sustainability transformation. It argued that scholars of sustainability transformation and earth governance as well as scholars and practitioners from multi-stakeholder collaboration initiatives have become more conscious of the world as a vast interconnected system in constant highly interdependent interaction. Research from this perspective defines leadership as the capacity of a collective of actors to lead transformative change using multiple approaches. It suggests that the SDGs should be seen not just as a technical and political implementation challenge, but also as an invitation to operate with a systems view of life in a spirit of collective leadership. This could generate new thinking and lead to new practice.

Chapter 4 took a deep dive into a systems view of life. It explored how systems thinking contributes to knowledge generation for conceptualizing leadership for transformative change. It advanced the pattern approach in creating a multidisciplinary understanding of evolutionary processes, including human beings with their multiple forms of organizations and societies. Speaking about patterns (of nature or the manifold human interaction systems) emphasizes the *relational aspect* of an arrangement, a constellation, a composition, a co-construction, or a co-creation. Chapter 4 approached the concept of patterns from three different perspectives: cognition theory, the ecosystems approach, and the pattern language approach. A fourth perspective introduced intentions and feelings as a feature of the evolutionary process that helps identify states of aliveness or states of compromised aliveness. The purpose was to understand how the insights drawn from these knowledge streams could impact perceptions of global leadership challenges, and how this could subsequently inform the way leaders, decision-makers, and agents of change steward transformative change as patterned interactions. Chapter 4 argued that transferring and translating the patterns approach to diagnose the functionality of socio-ecological systems may become key to understanding transformation in a new way. Thus, it needs to influence approaches to leading transformative change. The chapter created the basis for conceptualizing leading transformative change collectively. It concluded that:

- Seeing sustainability challenges as dysfunctional socio-ecological systems interactions can spur global collective learning processes to rehabilitate, maintain, or co-create more functional patterns.
- Understanding the feeling of aliveness as a core driver of evolutionary processes and adopting such a conception for the human realm could engender multiple ways of leading transformative change collectively.

Building on the conceptual deep dive into a systems view of life, **Chapter 5** suggested a new

perspective on reality and future making – an emerging ‘patterns of aliveness’ theory as a new approach to transformative and life-enhancing co-creation. It argued that methodologies for navigating complex world-making and transformative change need to design system change to move towards more constructive co-creation that partners with life and evolutionary processes rather than endangering or constraining life processes. Based on the previous chapter’s insights and fourteen propositions, the chapter proposed six aliveness enhancing organizing principles which are constitutional for life to emerge, thrive, and re-create itself. It argued that these principles could conceptually anchor the practice model and function as a broader orientation for the practice of leading transformative change towards sustainability. It showed how these principles are interrelated and interconnected in their effect on the creation, maintenance, or rehabilitation of states and feelings of aliveness. The chapter suggested that the emerging ‘patterns of aliveness’ theory could be leveraged for large-scale systems transformation and suggested that leading transformative change collectively means stewarding co-evolutionary patterns of aliveness in multiple settings and levels of the global society. It concluded with the major insight that

- Developing the capability of distributed and cross-institutional actors to collectively safeguard existing patterns of aliveness, actively maintain them, regenerate disturbed or compromised patterns of aliveness, and more consciously co-create new patterns of aliveness is paramount for sustainability transformations.

Chapter 6 investigated how the emerging ‘patterns of aliveness’ theory is reflected in a day-to-day management practice in leading transformative change in multi-actor settings. It showed how the human competency dimensions of the practice model can be anchored in the aliveness enhancing principles, and it explored how these principles and dimensions can be mirrored in success factors and recommended practices of collectively-led transformative change in multi-actor settings. It demonstrated how the principles and dimensions translate to the planning and implementation management of multi-stakeholder collaboration initiatives. It presented two case examples where complex and patterned change was navigated in multi-stakeholder collaboration, and used the lens of the principles and the dimensions to analyze the change processes. The chapter concluded with the insights that

- Multi-stakeholder collaboration initiatives that invigorate human collaboration systems are laboratories for stewarding transformative change towards patterns of aliveness and may become the new norm in leading change collectively across the boundaries of sectors and institutions.
- Transformative process designs are crucial for the effectiveness of collaborative sustainability initiatives. Both the practice model and the six life-enhancing principles could function as a meta-level guidance offering orientation for success factors in transformative process designs that enhance patterns of aliveness in socio-ecological systems.

In order to make the principles and the practice model applicable to large systems change, their relation to drivers of transformation needed to be explored. **Chapter 7** built on the conclusions from the previous chapters by reporting the perspectives of sustainability transformation practitioners. It also drew on current conceptual discourses regarding intervention measures and change designs for sustainability transformation. It argued that

taking the pattern perspective as a relational interaction between different approaches could greatly advance the effectiveness of intervention designs and collaborative initiatives for sustainability transformation. Chapter 7 suggested four shifts in mindset toward a new way of approaching large systems transformation that takes into account principles of life-enhancing patterns. The chapter analyzed the results from 50 research inquiry conversations with scholars and practitioners in the global sustainability arena and identified six drivers of sustainability transformation. It briefly sketched different scholarly discourses on these drivers and elaborated how to turn them into enablers for sustainability transformation. It suggested relationally integrating these approaches with the aliveness enhancing principles and the practice model into an overarching meta-level conceptual architecture for transformative change design. Following Alexander's (2004) idea of 'structure preserving transformation' it showed that many sustainability transformation activities, discourses and practices are already taking place, albeit often in competition with or disconnected from each other. It emphasized that a reorientation towards reverence for humanity's participation as one actor in an interconnected self-regulating socio-ecological world-system could turn disconnected drivers into relational enablers of sustainability transformation. Anchored in the emerging 'patterns of aliveness' theory, these enablers were integrated into the conceptual architecture as *enlivening narratives, empowering metrics, sustainability-oriented innovation, enabling structures, multi-issue, multi-level governance, and guiding regulations*. The chapter showed how the conceptual architecture could contribute to connecting intervention strategies for sustainability transformation. It illustrated how the conceptual architecture might be applied using an example of a large-scale and complex change design, Finland's Roadmap to a Circular Economy. It argued that attending to sustainability transformation enablers could support actors in collectively designing more effective and transformative intervention processes for large systems change. Chapter 7 concluded with the insights that

- The urge towards increasing aliveness in relational patterns of life and human agency needs to be better understood.
- Anchoring different approaches to sustainability transformation in the emerging 'patterns of aliveness' theory with its six organizing principles can provide meta-level guidance for large-scale intervention designs for sustainability transformation.
- The task of leading transformative change collectively can be eased by a conceptual architecture that translates the non-linear aliveness enhancing principles into the more linear planning modalities.
- Conceiving the complex task of leading transformative change toward sustainability collectively as stewarding co-evolutionary patterns of aliveness might help transform the current pre-occupation on sustainability as compliance and constraints into a mind-set of contribution to a thriving planetary future.

This research advanced the hypothesis that shifting dysfunctional patterns of socio-ecological interaction into more constructive and future-oriented collective socio-ecological system patterns contributes to increasing patterns of aliveness for humankind and nature, and as a result contributes to sustainability. Multiple collaboration initiatives at different levels could become fractals of the enlivenment capacity of collectives of actors to steward transformative change. It therefore argues that leading transformative change for

sustainability needs to be seen as a collective capacity to invigorate individual and collective competencies to further aliveness patterns. It needs to be conceptualized, studied, developed and researched as a capacity of a collective of diverse actors that brings about change across and beyond institutional boundaries. It suggests that ***leading transformative change collectively*** be best understood as ***stewarding co-evolutionary patterns of aliveness in a networked fashion at multiple levels of the global society***.

Successful sustainability transformation ultimately hinges on a broad range of actors to organize themselves around stewarding transformative change. Such change cannot be steered; it can only be coordinated to a limited degree. Taking into account the meta-level conceptual architecture for transformative change design, which is anchored in the aliveness enhancing principles and related to patterned human competencies dimensions, helps unleash dynamics of mutually supportive self-organization around increasing patterns of aliveness. **To accelerate sustainability transformation, change agents need meta-level guidance that bridges the experiential gap between the complex non-linear dynamics of life and human interaction processes and the linear mode of planning and management that currently dominates large-scale change initiatives.**

In an essay on ‘transition towards sustainability’ Haberl, Fischer-Kowalski, Krausmann, Martinez-Alier and Winiwarter (2011) suggest that over the last two million years humans have created “socio-ecological systems in which fundamental patterns and processes are co-regulated by socio-economic and ecological processes” (p. 1). The next ‘great transformation’ from an industrial society toward a sustainable one requires a “re-orientation of society and the economy, not the implementation of some technical fixes” (p. 1). This dissertation suggests that **such transformation can work, if many actors rationally and emotionally connect with local and global ‘patterns of aliveness’ and contribute to shifting systems at many scales from dysfunctionality towards more functional patterns of interaction in multiple, partly coordinated and partly networked self-organized ways.**

In that regard, working toward the 17 Sustainable Development Goals as a narrative for global change, a basis for metrics that display sustainability progress, and an inspiration for guiding regulations is one very important global move. It allows many different actors to organize themselves around large systems change. Using the suggested conceptual architecture for transformative change design to inform large-scale intervention strategies and the Collective Leadership Compass as a planning methodology for improving collaboration patterns will ensure that roadmaps for systems change take the necessary human competencies and life-enhancing principles into account. Roadmaps towards transformation, as detailed implementation plans, need to be created in collaboration and consultation with multiple stakeholders. The conceptual architecture cannot be prescriptive; it has to be adapted to the specific situation and creatively engender many different ways of manifesting the design elements.

This dissertation echoes the idea that leading transformative change collectively means accepting humankind’s place in the natural world and understanding as well as working in concert with the ways nature creates flourishing environments. Yet, the dissertation also suggests that the organizing principles for furthering ‘patterns of aliveness’ that anchor the

framework and the Collective Leadership Compass represent a new way of seeing reality. Dürr et al. (2005) argue:

This must and can lead to a new kind of thinking that connects the fullness of our perceptual ability and mental movements and acknowledges both conscious and unconscious motives for human action. This indicates a new evolutionary level on which a complex perception of reality creates the foundation of our thinking, feeling, and acting. In this way, we can change our goals and strategies into patterns and movements of adapted effect (p. 24).

The task of stewarding co-evolutionary 'patterns of aliveness' is part of a new transformation literacy required by many actors across all sectors of the global society. What is really needed is the ability to design the 'choreography' **of patterns that work and patterns that connect**. Collectively stewarding the relational interaction between the six transformation enablers accelerates transformative patterns of change.

Practical implications and future vision

What would it mean, if the emerging 'patterns of aliveness' theory was widely adopted by sustainability practitioners across sectors and institutions? What would it mean to anchor the conceptual architecture for transformative change design in the development of roadmaps to sustainability transformations?

The knowledge streams behind the emerging 'patterns of aliveness' theory are not new. Beyond their scientific origins, they might be traced back in some cases to indigenous wisdom traditions, and many other scientific schools of thought outside the scope of this dissertation. This dissertation brings a new focus on **looking explicitly at aliveness as a discernable pattern and looking at transformation processes as patterned occurrences**. It **takes the notion of aliveness or enlivenment (Weber, 2016) as core element for the conceptual foundation of leading transformative change collectively**. This new approach allows for what Alexander (2004; 2007) calls 'structure preserving transformation', because it takes the competencies and existing patterns that already work as starting points, and develops them further. Thus, the conceptual architecture for transformative change design presented here should encourage creative application in many different ways. Like the choreography of a dance performance, transformative change design need to be composed of movements that resonate with, enliven, and inspire the 'audience' in a co-creative way. They need to acknowledge that the 'audience' will pro-actively implement the change. Efforts towards sustainability transformation taking place already need to be transformed into connected, mutually supportive laboratories. If translated into the day-to-day reality of leading transformative change collectively, this approach could have a number of practical implications:

In their attempt to become purpose-driven companies (Hollensbe, Wookey, Hickey, George, and Nichols, 2014) that take seriously their contribution to the common good, private sector actors would think about how their products and services further (or diminish) patterns of aliveness. They would investigate in how far production, consumption, and waste disposal impact general or specific patterns of aliveness. This would move evaluation beyond compliance-driven metrics such as water or carbon footprints or socio-ecological standards.

The shift toward Circular Economy or Blue Economy⁸⁷ practices that learn from the ingenuity of ecosystems (Pauli, 2010) would turn companies into contributors to local and global societal well-being.

National governments would shape national identity as a form of relatable containment, but would engender identity not on the basis of language, race, or societal status, but on collective performance in terms of local and national patterns of aliveness. They would also seek to steward patterns of aliveness in larger entities from regional to global. Governments would be judged and elected according to their capability to steward patterns of aliveness for all in a process co-negotiated with their citizens, but inspired and constraint by globally guiding criteria of planetary aliveness. NGOs would extend their mandate to become even more conscious guardians of patterns of aliveness (which they are already to a certain extent) and become caretakers of laboratories for aliveness patterns. Multiple level governance systems with multiple stakeholders would steward the emergence, rehabilitation, and co-creation of patterns of aliveness.

All would participate in one global governance system, but the principles of stewarding co-evolutionary patterns of aliveness would apply to all levels of global and local socio-ecological systems. Hence, there would be multiple governance systems that arise for different issues (as is already happening) with the purpose to steward, maintain, co-create, or rehabilitate patterns of aliveness. Similarly, multi-stakeholder collaboration would increase as needed in order to ensure, maintain, and co-create patterns of aliveness in multi-sector local to global alliances, thematic networks, or short-term implementation partnerships. Responsible supply chains, organic agriculture, and renewable energy would become the new mainstream and their contribution to individual, societal, and global patterns of aliveness would be monitored. Educational systems would teach the narrative and foundation for seeing the world as an interconnected whole with the urge for aliveness and would invigorate the students' intentions and competencies to further patterns of aliveness.

But is it possible to translate an emerging theory based on natural life processes, into the social realm, and more specifically into the realm of leadership? The answer is clearly *no*, because social systems are very different from natural systems. Human beings have complex competencies unlike those found anywhere else in nature. At the same time, the answer is clearly *yes*, as humankind is part of an evolution towards increasing complexity. What gives rise to natural systems gives rise to human systems; the same principles open a myriad of different possibilities to manifest in an evolutionary process.

The currently increasing global efforts towards sustainability transformation, for which the 17 Sustainable Development Goals provide transformative guidance, are on the verge to becoming a global transformation system. It is time to develop metrics for progress that are anchored in traditional measurements but that also account for 'aliveness'. Using methodologies that translate the non-linear world into the logic of collective sense-making and collective co-creation for transformative change would make this process easier. In that way, this dissertation agrees with Alexander's (2002b) conclusions that **effecting**

⁸⁷ Source (accessed on 20th April 2017): www.theblueeconomy.org

transformation to a sustainable world requires all actors to understand how to engender aliveness and work with injecting such an approach into the currently existing systems and structures. He states:

There is no ‘revolutionary’ approach that has much hope. The present system cannot be destroyed and replaced: it is too widely present, and too deeply embedded, in too many institutions. And it is, besides, for all its faults, serving us too well, in too many areas of life, for us to want to destroy and replace it. [...] The practical means we seek must be gradual, incremental modes of change, which somehow manage to inject living sequences – and morphogenetic ones – into the present system of processes (p. 532). [...] We begin to envisage a world in which every process, rule, human interaction, purpose-filled act, and anything which touches the environment engages with the major task of creating coherent living form. This needs to be understood by everyone: administrators, inventors, actors, users, builders, children (547).

Suggestions for Further Research

This dissertation illustrates a pathway towards a ‘pattern of aliveness’ approach to sustainability transformation and argues that leading transformative change collectively can take place among multiple actors at multiple levels of the global society. The need to accelerate and enhance sustainability transformation requires scaling both research and practice into more effective learning collectives. This dissertation introduces a conceptual architecture for transformative change design as a meta-level guidance for multiple actors stewarding co-evolutionary patterns of aliveness. It suggests further research on how to build the capacity of groups of actors to become catalysts for large systems change in complex multi-stakeholder settings. Such research could include exploring how methodologies like the practice model and the conceptual architecture contribute to accelerated collective learning, involving a wide range of stakeholders. Further exploration should also be directed toward adapting such ‘translational’ methodologies in institutions and among actors and decision-makers that are tasked with implementing the SDGs.

The new research agenda (Bai al. 2016) described in Chapter 3, suggests exploring dynamic transformation patterns. Further research should investigate how actors discern functional patterns in human and socio-ecological systems. The conceptual architecture developed in Chapter 7 based on the emerging ‘patterns of aliveness’ theory could be utilized to explore approaches to sustainability transformation in networks, global and local platforms, and multi-stakeholder initiatives. This should be substantiated by case studies and assess how to accelerate transformation by scaling up the experiential knowledge of leading complex change in multi-actor settings. Further research could examine how the emerging ‘patterns of aliveness’ theory could reorient and shift how we understand socio-ecological systems, and how this could inform practices of multiple actors to collectively lead transformative change in stewardship of natural assets and biodiversity across societal sectors and levels. Deeply investigating currently undervalued and disconnected conceptual approaches to aliveness, enlivenment, vitality, resilience, or thriving, and finding ways of ‘translating’ these understandings into practical implications for transformations to sustainable futures, may become an essential contribution to global and local sustainability transformation.

“People say that what we’re all seeking is a meaning for life. I don’t think that’s what we’re really seeking. I think that what we’re seeking is an experience of being alive, so that our life experiences on the purely physical plane will have resonances with our own innermost being and reality, so that we actually feel the rapture of being alive.”

(Campbell, Moyers and Flowers, 1991, p. 1).

9 Annex

9.1 List of References

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9.2 Type of Participants and Summary of Results from Inquiry Conversations with Transformation Leaders

The deliberations on the **design of transformative change at the scale** in Chapter 7 are partly based on semi-structured research inquiry conversations.

In the context of this dissertation the author conducted 50 of such inquiry conversations between 2015 and 2017 that included:

- Exploratory dialogic conversations on transformation issues during conferences with speakers or session leaders (10)
- Questions and answer sessions, or interactive plenary sessions with conference participants, where the author presented papers, gave session inputs, or presented a keynote speech (12)
- Exploratory, yet targeted conversations in small groups settings that aimed at advancing the systemic approach to sustainability transformation (18)
- Individual research conversations in person or using communication technologies (10)

Overall the research partners were active on global issues, however, the majority acted from a geographical area located in Europe or the United States. A lesser number of research partners were located in Africa and Latin America. The research partners were chosen based on the following criteria:

- Professional involvement in sustainability issues that included a global perspective.
- Sufficient degree of position, institutional power or leverage to influence sustainability discourses, decisions or development.
- Familiarity with the global discourse on transition or transformation to sustainability.

The conversations explored many issues following the flow and topic that was under discussion. They touched the following three main topics that were relevant for this dissertation. Each of the topics was supported by a guiding question.

- The research partners entry points for engagement towards sustainability transformation:
 - Guiding question: *What is your specific field of expertise in sustainability?*
- Deliberation on approaches to transformation
 - Guiding question: *What, in your view, are the most promising approaches to global sustainability transformation?*
- Perceptions of drivers or enablers of transformation
 - Guiding question: *What drives sustainability transformation is certainly a set of actors, but if you had to choose the most important, which one would it be?*

- Aspects and prospects for scaling or accelerating transformation.
 - Guiding question: *How, in your view, could transformation to sustainability be accelerated?*

Some of the research inquiry conversations took place during the following events, which author attended:

- 1st Eberswalde Ecosynomics Forum, April 2nd, 2015, Eberswalde University for Sustainable Development. Eberswalde, Germany.
- WIN Conference, 1st to 3rd October 2015, Rome, Italy.
- Promoting Effective Partnership Co-Design Workshop, 21st to 22nd February 2016, Rotterdam, The Netherlands.
- Conference on Cross-Sector Partnerships for Systemic Change, 17th to 20th April, 2016; Toronto, Canada.
- 7th International Conference on Corporate Social Responsibility; Humboldt University, 16th September 2016; Cologne, Germany.
- ACCION, Conferences „No Exit“, 23rd August, 2016; Santiago de Chile, Chile.
- 3rd Conferences on Corporate Social Responsibility, 3rd August, 2016, Cologne, Germany.
- High Level Meeting GPEDC, Nairobi, Kenya, 1st December.
- OECD workshop ‚Measuring Business Impacts on People’s Well-being‘, 23rd to 24th February, 2017; Paris, France.
- Transformations 2017 Conference, 30th August 2017, University of Dundee, Dundee, Scotland.
- Transformations 2017 Conference, 1st September 2017, University of Dundee, Dundee, Scotland.
- SDG Transformation Forum, 2nd September 2017, Dundee, Scotland.
- Potsdam Summer School, 5th September, 2017, Institute for Advanced Sustainability Studies, Potsdam, Germany.

The content of the conversations was documented in different ways: during most one-on-one conversations the author took notes or taped the conversation, if this had been agreed, and later summarized the results in a table format. During the small group conversations the author took notes and summarized the content afterwards. The same process applied to the question and answer sessions as well as the explorative conversations during conferences.

Table 18 summarizes the main results from the research conversations regarding the above-mentioned three topics.

Table 18: Summary of results from research inquiry conversations
(Copyright by the author)

No	Country	Role/Position /Expertise	Entry point for the engagement for sustainability transformation	Approaches to sustainability transformation	Identified Drivers of transformative change	Scaling transformation
1	United States	Author, global community organizer on large systems change	Engaged in the conceptualization and promotion of global action network, community organizer for sustainability action on international level	Forming global action networks, bringing together science and practice, understanding the difference between reform and transformation	Creating global networks that drive change cross boundaries of nation states. Building communities for change	Bringing actors together in 'change communities' around certain issues (e.g. food security, water, or transformation in general), overcoming the silos of 'bucket communities', enhancing the discourse on transformation between science and practice
2	Sweden	University professor, advocate and co-developer planetary boundaries	Engaged in conceptualization of science based planetary boundary concept,	Approaching transformation from the idea of planetary resilience, management of biophysical metrics as foundation for transformation	Wide-spread awareness of needed planetary biophysical balance, acceptance of humankind's responsibility to manage planetary boundaries	Self-driven, metrics-based management of planetary boundaries in every country as well as at global scale
3	United States	Lecturer, transformation advocacy, head of research institute	Advocacy for a global mind-set-shift in taking responsibility for future generations.	Research-based advocacy for planetary stewardship of natural assets.	Safeguarding narratives as motivation for global responsibility.	Knowledge-building and engagement for a safeguarding narrative based on new scientific insights.
4	Germany	Head of globally active foundation	Engaged in funding and convening international and local reflective dialogues and stakeholder collaboration for local change	Facilitation of processes that bring different stakeholders together, convening collective reflection circles, awareness raising through collective reflection	Realization of human interconnectedness, empowerment through seeing the possibilities to shape the future together	Wide-spread understanding that refocusing on the 'We' and the common interest as key to sustainability transformation
5	United States	Head of NGO, advocacy for narrative shift and new economic system	Engaged in re-conceptualizing the concept of capitalism	Furthering a new narrative of an economy in service of life, promoting human and planetary well-being as cornerstone for sustainability transformation, overcoming neoliberal thinking	New narratives that counterbalance the neo-liberal narrative	Widespread embedding of a new narrative of an economy in service of life in education, business and society.
6	United States	Author, University professor, focus on well-being approach	Reorientation of higher education and business schools towards new economic paradigm	Advancing sustainability thinking at all levels of higher education, self-reflection of business leaders, driving a new narrative of an economy in service of life	New narratives about sustainability as flourishing societies and an economy in service of life, embedding such narratives in education	Systematic anchoring of a new narrative at business schools.
7	Chile	Author, theorist, advocate for	Long-standing well-received research on	Advancing an understanding of the role of	People changing their theories about reality and each	Widespread application of processes that enhance new

No	Country	Role/Position /Expertise	Entry point for the engagement for sustainability transformation	Approaches to sustainability transformation	Identified Drivers of transformative change	Scaling transformation
		cognition as process of life	cognition as the process of life	perception/cognition and communication in reshaping human interaction and interaction between people and the environment	other, evolution of consciousness, taking mutual respect as core element of changed theories	awareness of reality
8	Germany	Head of research and policy advice institute, climate specialist	Long-standing engagement in climate research and future scenarios based on complex non-linear dynamics, physics perspective	Raising awareness of climate risks, promoting resource allocation and regulatory adjustments	Awareness of risks, political arena taking a stance for policy adjustments, international negotiations	Global agreements scaled-down to implementation in each country, financial models that allocate funds to sustainability transformation
9	Switzerland	Managing partner nonprofit consultancy, developer of social change methodology	Supporting multi-stakeholder settings to drive change around issues of common concerns together	Strengthening backbone organizations which catalyze and support collective change endeavors	Commonly agreed goals, experience of capabilities in jointly stewarding collective impact	Local and global communities of practice for collective impact
10	Canada	Consultant complex multi-stakeholder change initiatives	Using integral (non-linear) concepts to help actors in multi-stakeholder settings achieve results jointly	Capacitating a system of actors to bring about change collectively, translating non-linear models into the linear day-to-day planning reality of actors	People who are able to see a different future, collective experience of being able to shape future together	Making methodologies for change in multi-stakeholder settings available to a larger number of people
11	France	Senior manager European international agency, involved in G20 consultations	Using a policy and administrative approach to embed global responsibility in government institutions of member countries.	Mix between co-designed guideline development and peer-groups pressure plus transparency of progress to drive change at government levels.	Regulatory frameworks combined with voluntary guidelines, transparency in reporting.	Peer-group pressure between governments of different countries. Co-ownership of voluntary guidelines.
12	Germany	Head of corporate sustainability department, former state minister	Engaged in establishing environmental regulations in Germany, engagement processes across different government ministries	Regulatory approach combined with consultation and stakeholder engagements processes	Shift in thinking about what is possible and what people can achieve together, more widespread taking up of responsibility	Decisive political decision-making, policy development and regulations, but combined with stakeholder consultation
13	The Netherlands	Human resource manager global reinsurance corporation	Engaged in promoting sustainability thinking as part of HR, participation in reflective leadership dialogues at international level (through Swedish foundation)	Dialogue and reflection, anchoring sustainability thinking in leadership development, promoting young leaders programs with sustainability focus	Embedding sustainability thinking and reflective skills in companies	Promoting sustainability thinking in large companies
14	Germany	Head of global	Long-standing	Commodity	Complementary and	Taking a sector

No .	Country	Role/Position /Expertise	Entry point for the engagement for sustainability transformation	Approaches to sustainability transformation	Identified Drivers of transformative change	Scaling transformation
		program on sector transformation in development cooperation agency	engagement in developing sustainability standards for responsible supply chains, collaboration between standards, and sector transformation approaches	sector transformation through voluntary standards and multi-stakeholder collaboration for responsible supply chain	Integrated approaches to commodity sector transformation as collaboration between private, public and civil society sector, voluntary standards as catalysts	transformation view in designing responsible commodity value chains, collaboration between different voluntary standard organizations
15	Germany	Executive director government advisory council	Activist for sustainability and changing the economic systems	Integrating the need for individual mind-shifts into transition research and approaches, integrating niche innovation as core driver of transition processes	Mind-shifts and new narrative about an economy in service of life, translated into concrete actions in the socio-technical landscape, fostering innovation for sustainability	Global networks, advancing the discourse, doing the actual work on the ground,
16	Germany	President of global change community	Long-standing engagement for decoupling, energy efficiency, and	Science-based, using indexes and metrics, influencing politicians and governments to formulate better policies	Knowledge on human impact and transformation possibilities, policy development as main driver, regulations that ensure better balance	Spreading information about advanced sustainability practices, influence in the political arena, wide-spread adaption of better policies,
17	Kenya	Head of mobile communication Company, involved with global sustainability business community.	Engaged in driving sustainability goals in private sector	Taking a selection of the 17 SDG as guidance for business strategy development and implementation	Planning instruments that are oriented towards SDG implementation	Wide-spread adoption of SDG for strategy development of business
18	South Africa	Head of Pan-African NGO, former CEO international advocacy NGO	Engaged in driving global civil society networks, bringing Africa to the table in sustainability transformation	Reshaping the contribution of civil society as drivers for sustainability. Mobilizing young people to engage with a different future.	Democratization of finance system, mitigating and reducing climate change impacts. Specifically engaging young people and bringing them to the table with a new narrative. Developing frameworks for shifts in resource allocation.	Shifting resource allocation. Ensuring the driver role of civil society. Give a voice to young people, especially from Africa.
19	United States	Transformation director, global business community for sustainability	Heavily engaged in driving strategies ensuring large and small businesses take a pro-active role in sustainability transformation	Bring businesses into a community for change	Leveraging business power for driving sustainability transformation, thought leadership advocacy, advancing a new narrative on role of economy	Accelerating systemic change across all levels of the global economy
20	Germany	Formerly secretariat of global knowledge network for sustainability	Supporting the setting up of a global knowledge network on sustainability	Knowledge networks that advance good practices, and spur the discourse on	Global knowledge exchange, advocacy through knowledge creation, collective action for sustainability on the	Accelerating global knowledge and action networks

No	Country	Role/Position /Expertise	Entry point for the engagement for sustainability transformation	Approaches to sustainability transformation	Identified Drivers of transformative change	Scaling transformation
				transformation to sustainability	ground	
21	Spain	Director research consultancy for the aviation industry	Engagements for taking the living systems view into the sustainability discourse.	A new approach to innovation, provoking new thinking and a new view of the nature of reality	Anchoring a mind-shift towards seeing the global society as a society of the living that needs to take care of the condition of life to thrive	Developing risk management mentality into a mentality of contribution to a living society.
22	Sweden	Senior researcher at global research institute	Research on systems entrepreneurs for sustainability-oriented innovation	Connecting innovative approaches and innovators across various disciplines.	Sustainability-oriented innovation. Focus on those innovations that are relevant for systems change. Supporting enabling environments for innovation.	Resource allocations towards sustainability-oriented innovation, understanding enabling environments, connecting and creating networks of system change entrepreneurs
23	Sweden	Manager global future-oriented science network	Managing research networks on sustainability transformations.	Driving science to interact with practice in sustainability transformation. Supporting transdisciplinary approaches in research.	Reforming research structures so that they enable true sustainability transformation research. Identifying innovative research approaches.	Advancing the dialogue between science and practice in sustainability transformation.
24	United States	Senior researcher international sustainability institute	Understanding collective behavior change in large systems.	Research-driven exploration of individual, societal and global conditions for sustainability-oriented behavior change.	The changing role of narratives as form of collective meaning-making in sustainability transformation.	Widespread understanding of the role of narratives, co-creation of future-oriented narratives.
25	Germany	Scientific director global research Institute	Risk assessment and risk management as guiding force for sustainability transformation.	Research on understanding risk perception as positive driver of decision-making towards sustainability.	Risk analysis and management and safeguarding narratives. Integrating risk management strategies in dialogic approaches and societal participation.	Embedding risk management strategies in policy formulation and decision-making. Finding ways of reducing complexity in risk perception.
26	Sweden	Senior manager global action network on water	Mobilization of globally responsible, locally relevant action for water security.	Engaging country-based actors into global network on water security, driving exchange and lessons learnt between countries, embedding strategies in national governments.	Driving adoption of regulatory approaches to water management combined with accelerating water governance approaches involving multiple actors at local levels.	Meta-collaboration between different approaches so water security and different global initiatives.
27	South Africa	Executive director global business association for sustainability	Integrating global responsibility into leadership development and business school curricula globally.	Combining individual mindset-shift of aspiring leaders with integrating global responsibility as a subject in curricula of business schools globally.	Combining globally responsible narratives with enabling structures in higher education. Overcoming the old school of management education.	Creating a movement of sustainability-oriented business schools.

No .	Country	Role/Position /Expertise	Entry point for the engagement for sustainability transformation	Approaches to sustainability transformation	Identified Drivers of transformative change	Scaling transformation
28	United Kingdom	Executive director backbone organization in support of partnerships	Driving collaboration between business and NGOs in the fight against poverty.	Creating new forms of collaboration, both globally as well as on the ground between private sector, NGOs and governments. Creating platforms to support multi-stakeholder partnerships.	Using partnerships and collaboration between stakeholders to overcome impeding structures and create enabling environments for sustainability engagement of businesses.	Anchoring the partnership approach at the UN-level and creating enabling structures for partnerships at country levels.
29	The Netherlands	Professor at university, head of research center on partnerships	Researched-based promoting of partnerships between government, NGOs and private sector	Showcase the role that partnerships can play in sustainability transformation. Using monitoring and evaluation as an entry point to improving partnership results.	Drive partnerships as a new form of overcoming silo-structures in the implementation of SDGs.	Substantiate current trend towards partnerships with research of contexts, quality issue in partnerships and needs for capacity building.
30	Germany	CEO start-up and sustainability innovator	Development of breakthrough solar energy product requiring widespread societal stakeholder engagement.	Introducing sustainability-oriented innovation for decentralized energy supply of municipalities.	Creating an enabling environment and more explicit government support for sustainability-oriented innovation.	Encouraging self-initiatives in sustainability-oriented innovation and combining product innovation with societal transitions to sustainability.
31	Germany	University professor, author	Integrating sustainability into strategic management issues of large corporations.	Science-based conceptualization of strategic management and sustainability. Delivering data to show that corporate sustainability engagement pays off.	Of large companies. Convincing companies to invest in strategic positioning of sustainability.	Leveraging sustainability as a competitive advantage.
32	Germany	Head of sustainability center at university, global activist	Driving the sustainability agenda at the university	Engagement of students in cross-cutting sustainability topics.	Knowledge on sustainability issues, network-building and experience exchange for implementing sustainability practices.	Knowledge spreading, students and younger generation as multipliers of sustainability approaches.
33	Germany	Head of sustainability at global consulting firm	Finding ways to integrate sustainability into the management of large companies. Integration of innovation and sustainability discourse.	Using digitalization innovations to drive sustainability.	Leveraging IT and digitalization as drivers for sustainability-oriented innovation. Building and utilizing digital networks as well as digital feedback structures.	Investment in digitalization as prerequisite for accelerating and scaling sustainability transformation.
34	United States	Professor for strategic management	Integrity, ethics and dignity as prerequisite for sustainability transformation.	Revisiting the role of memes as the basis of narratives that further or prevent sustainability transformation.	Narratives (memes) as core drivers.	Anchoring a reflection on sustainability narratives in management science.

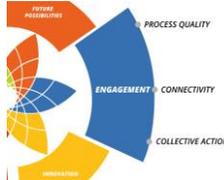
No	Country	Role/Position /Expertise	Entry point for the engagement for sustainability transformation	Approaches to sustainability transformation	Identified Drivers of transformative change	Scaling transformation
35	Belgium	Entrepreneur, driving product development for sustainable economy	Product innovation that spurs social innovation.	Integrated product development and societal change management for sustainability.	Sustainability-oriented innovation of products and processes.	Using product development to connect diverse stakeholders and mobilize innovation for sustainability transformation.
36	United States	Professor for management, coordinator of network for new management approach	Taking and ethical approach to management education.	Combining ethics, good governance in corporations and sustainability approaches.	Anchoring a new narrative of an economy in service of life in management education, both in higher education as well as in leadership development in corporations.	Developing global networks around a new and ethical narrative of management that takes responsibility for global sustainability.
37	United Kingdom	Complexity specialist, head of research center, former top manager global IT company	Taking insights into complexity theory into sustainability practices.	Developing mass collective-sense-making methodologies for better understanding of trends and developments.	Collective sense-making as key driver for learning processes towards sustainability practices.	Using digital technologies to scale sense-making methodologies.
38	United Kingdom	Senior lecturer, research institute for development with global reach	Supporting action research in bottom-up empowerment processes.	Nurturing emerging change initiatives and collective sense-making, leveraging collective action for sustainability in communities.	Collective-sense-making processes as prerequisite for empowerment.	Scaling action research for bottom-up empowerment processes.
39	United Kingdom	Professor systems theory at university	Leveraging systems theory and subsequent approaches for sustainability practices.	Using collective-sense-making methodologies for collective situational analysis.	Understanding the role of sense-making as part of governance approaches towards sustainability.	Improved science discourse on methods furthering collective sense-making.
40	United Kingdom	Independent consultant, former manager World Economic Forum	Understanding of power structures that hold economic systems in place.	Developing new narratives and using powerful processes to introduce sustainability narratives at various societal and global levels.	New narratives for sustainability combined with overcoming power structures.	Anchoring new narratives in business and society, addressing power imbalances.
41	Norway	Government advisor, member global pioneering community	Helping governments in decision-making processes for laws and regulations.	Introducing government regulations and laws that function as strict guidance for changing economic outputs towards sustainability practices.	Taking a regulatory approach, government decisions, policy changes and monetary incentives for sustainable economic behavior.	Making a few governments take a lead, creating peer-group pressure between governments.
42	United Kingdom	Author, independent consultant	Understanding patterned thought processes as key condition for future-making.	Organizing collective action for sustainability on the basis of systems approaches.	Creating enabling spaces for dialogue and interaction that overcome mental barriers to collective action for sustainability.	Driving methodologies that translate non-linear pattern approaches into the realm of linear planning in societal change processes.
43	Germany	Journalist, author	Taking new biology insights into the	Furthering the discourse between new	Anchoring new ways of seeing reality in the public discourse	Creating learning spaces for sustainability transformation in

No .	Country	Role/Position /Expertise	Entry point for the engagement for sustainability transformation	Approaches to sustainability transformation	Identified Drivers of transformative change	Scaling transformation
			development of policy approaches, advancing new ways of seeing reality based on systemic approaches.	scientific insights and the political arena.		multiple connected circles, integrating science and political discourse on sustainability.
44	South Africa	Former member of truth and reconciliation commission	Taking a first person approach to transformation.	Acknowledging the role of societal reconciliation processes and restorative justice as key element for transformation.	Invigorating humanness as a core connector between the current state of the world and transformation to sustainability.	Enhance global learning on societal reconciliation as a prerequisite for transformation.
45	Argentina	Chief Scientific Officer, multi-national textile company	Product and processes innovation towards sustainability	Taking business approaches to sustainability beyond compliance and into contributions to thriving societies.	Redefining the role of the private sector in sustainability transformation, creating narratives and product and process structures that make business active contributors to sustainability transformation	Embedding a new paradigm regarding the contribution to a thriving planet at the C level of businesses.
46	United States	Professor for management and ethics at University, author	Integrating ethics and respect for human dignity into management education	Advancing a first person approach to transformation by bring the human competencies for empathy and mutual respect to the forefront of efforts towards global change	A new narrative of an interconnected world, seeing human beings as competent of ethical behavior, advancing human rights in regulating activities of corporations.	Advancing human rights, learning from societal reconciliation and transformation processes
47	Island	Professor for sustainable development, University	Long-standing experience in advancing knowledge on regulatory approaches and sustainability modeling.	Combining the development of global and societal well-being indicators with participatory processes.	Overcoming the focus on 'old style' metrics and advancing the global discourse on sustainability metrics.	Making sustainability metrics understandable for the population, empowering people to contribute data to bottom-up measurements of progress.
48	United States	Executive Director Sustainability Business Community	Background in advocacy work for civil society, taking corporations on the route to sustainability	Mixed approaches, developing a grand transformation vision with a new narrative of corporate contributions to sustainability, also working on business-compatible metrics for sustainability.	Developing a set of metrics that the corporate world can understand and apply, but also advancing a new narrative beyond compliance.	Anchoring sustainability contribution as part of reporting mechanisms for corporations.
49	United States	Executive Director Philanthropy Circle	Helping global philanthropists take a systemic approach and go beyond project financing.	Connecting innovative actors and global philanthropists.	The actual working together, making people feel they are part of a larger systems working towards sustainability.	Creating an open learning space between philanthropists that give large amounts of funds to innovative actors.
50	Australia	Former senior manager global	Long standing experiences about success and	Creating convening spaces for	Organizing learning on sustainability approaches and	Scaling a global discourse on sustainability

No .	Country	Role/Position /Expertise	Entry point for the engagement for sustainability transformation	Approaches to sustainability transformation	Identified Drivers of transformative change	Scaling transformation
		accountability, international development NGO, former senior manager global network on water	failure of developmental approaches	learning around sustainability approaches	practices in multi- stakeholder settings	transformation in multiples dialogic spaces.

9.3 Detailed Description of the Dimensions and Aspects of the Collective Leadership Compass

Table 19: The dimensions and aspects of the Collective Leadership Compass
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Dimension	Competencies	Aspects	Attention	Example range of manifestations
FUTURE POSSIBILITIES 	The competency to take responsibility and consciously shape reality towards a sustainable future	Future Orientation	The way we focus on potential or opportunities and drive change for the better.	Entrepreneurial spirit, drive, glass half full attitude, opportunity spotting, possibility-seeking, positive future outlook, focus on potential, solution-oriented, clear vision, goal setting, passion for change, inspiration by greater cause, attitude of continuous improvement, willingness to lead, openness to emergent change, effectuation.
		Empowerment	The way we inspire, capacitate and awaken passion and options for change.	Inspiring self and others, awakening others' passion for change, shifting mind-sets, building capacity, self-reliance, self-efficacy, self-responsibility, affirmative thinking, enhancing self-organisation, capacitation, delegation of responsibilities.
		Decisiveness	The way we commit, focus, follow-through, and measure progress.	Taking a stance, following-through, getting things done attitude, thorough planning, high quality project management, target-orientation, discipline, reliability, accountability, measurement of progress, commitment, willingness to manage, clarity of focus, patience, persistence, decision-making.
ENGAGEMENT 	The competency to build step-by-step engagement towards building effective collaboration eco-systems	Process Quality	The way we build step-by-step and structured engagement.	Step-by-step structured engagement, clarity of roadmap, reliability, transparency, authentic involvement of different stakeholders, attention to process, understanding interest groups, care-taking, attention to needs and concerns, trust building, relationship building, high quality process architectures, high quality communication
		Connectivity	The way we foster cohesion and build networks.	Creation of network connections, relationship building, connection of different actors, cohesion building, fostering identification, container building, community building, seeing coherence, building tribes.
		Collective Action	The way we drive joint implementation and delivery of results.	Alignment for joint implementation, delivery of results, fostering collective responsibility, fostering agreements, consensus-building, cultivating ownership, attention to collective impact, celebration of success, result-orientation, focus on outcomes, reaching agreements, joint implementation, of agreements, creation of functioning delivery structures, governance structures, and coordination.
INNOVATION 	The competency to create novelty and find intelligent solutions	Creativity	The way we nourish sources of creative energy and collective generation of ideas.	Nourishment of sources of creative energy, focus on passion, bringing in new ideas, inventiveness, creative solution finding, pursuit of dreams, creation of time and space for collective idea-generation, having fun, being playful, unorthodox ways, informal interaction, openness to new ideas, scheduling individual and collective time-out.
		Excellence	The way we pursue mastery and grow knowledge.	Striving for excellence, high quality delivery, attention to detail, attitude of continuous improvement, expansion of knowledge, acknowledgment of diverse expertise, service-orientation, benchmarking, knowledge and best practice exchange, learning from others who know more, mentoring.
		Agility	The way we move through crises, stay open to change, and cultivate risk-taking.	Openness to change, flexibility, preparedness to venture into the unknown, risk-taking, preparedness to invest, seeing obstacles as opportunities, attitude of discovery and adventure, acting beyond our comfort zone, transcendence of boundaries, humility, learning-oriented crisis management, quick adaptation to new situations, resilience.

Dimension	Competencies	Aspects	Attention	Example range of manifestations
HUMANITY 	The competency to reach into each other's humanness	Mindfulness	The way we deepen our awareness of reality in all aspects.	Self-reflection, stillness, collective reflection, deeper evaluation of experience, insightfulness, observation, connection with our or others' story, gratitude, multi-level awareness (reflecting while acting), search for meaning, finding coherence, awareness of fears, looking beyond surface reality, attention to human encounter, mastering the mind.
		Balance	The way we integrate personal and professional aspirations.	Well managed balance between personal and professional live, attention to personal relationships, attention to life goals and spirituality, knowledge on how to operate best, finding our optimal rhythm, cultivation of renewal.
		Empathy	The way we embrace the perspective of others and open gateways for reconciliation.	Stepping into the perspective of somebody, attention to each others' humanness, reconciliation, listening to the story behind a difficult to understand situation, giving appreciation, basing actions on love and compassion, giving respect.
COLLECTIVE INTELLIGENCE 	The competency to harvest difference for progress	Dialogic Quality	The way we attend to the structure and quality of conversations.	Attention to the quality of our conversations; awareness of fruitful communication patterns; listening; living dialogic practices; creating a thinking environment; inquiry; integration of different perspectives; creating settings for constructive dialogue; enhancing meaningful conversations, balancing advocacy and inquiry.
		Diversity	The way we foster diversity in thought, viewpoints, background, and experiences.	Respect for differences; encouragement of different perspectives, world-views, and opinions; fostering diversity in thought, viewpoints, background and experiences, managing conflicts constructively, listening before reacting, suspending judgment, willingness to encounter differences and difficulties, defencelessness, seeing opposition as corrective intention.
		Iterative Learning	The way we develop cycles of reflection into action.	Regular stock-taking (personally and professionally); building cycles of reflection into action; adjustment of strategies; creating learning spaces; regular stock-taking of life and/or progress; turning failure into progress; setting-up of learning structure; impact evaluation: setting-up of feedback mechanisms; evaluation.
WHOLENESS 	The competency to see the larger picture and stay connected to the common good	Contextuality	The way we connect with a larger context. The way we explore the larger context and place our action in it.	Considering a larger context, systemic view, actively searching for trends and developments, ability to gain perspective, seeing a broader picture, openness to see multi-level interactions, to capturing the essence of something, ability to sense what is needed in a situation, responsiveness to the needs of the larger whole – the organisation, cooperation system, society, and the world.
		Mutual support	The way we enhance each other's strengths	Appreciation, giving and receiving support, enhancing own and others' strength, attention to energy levels, attention to own vitality, contributing to others' vitality, seeing deeper connection, ability to renew in places of beauty, feeling connected with a deeper life force.
		Contribution	The way we use our gifts, assets, and capacity to make a difference towards a sustainable future.	Being inspired by meaning, balancing success with significance, wanting to make a difference, knowing one's strength, pursuing one's special contribution, following a calling, attention to one's potential refining one's own and a system's contribution to a sustainable world, focus on the common good.

9.4 About the Author

Petra Kuenkel is a leading strategic advisor to pioneering international multi-stakeholder initiatives that tackle common goods and sustainability issues. As a Member of the Club of Rome and the Co-Founder and Executive Director of the Collective Leadership Institute, she promotes the scaling-up of leadership and collaboration skills for change agents in sustainability transformation from the private sector, public sector and civil society. She has a profound background in leadership development and in conceptualizing dialogic change as an approach to effective change leadership in complex systems.

Petra Kuenkel has gained extensive experience in consulting complex multi-stakeholder partnering processes internationally (e.g. in Germany, Ethiopia, Malawi, South Africa, Cambodia, Laos, Egypt, Yemen), in particular multi-actor collaboration processes around common goods (land, water) or economic development (public-private dialogue, responsible supply chains). She is an expert for complex cross-sector and cross-institutional partnering, multi-stakeholder dialogues and standard development for value chains.

