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A Pattern Approach to Leading Sustainability Transformation

How the 17 SDGs Can Become a Starting Point for Systemic Change

Abstract:

This working paper explores the issue of leading transformational change for SDG implementation on the basis of a patterned approach to systemic change that enhances aliveness in socio-ecological systems. It argues that understanding such an approach may turn out to be a key leverage point for shifting the dysfunctional patterns of interactions, which cause the current complex and wicked global challenges, into more life-enhancing functional ones. The paper suggests that core insights from systems and complexity theory can greatly advance a new approach towards leading transformational change for the implementation of the 17 Sustainable Developmental Goals. This also requires conceptualizing leadership as the collaborative capacity of a collective of diverse actors across institutional boundaries in a patterned approach, because transformation encompasses more than change: it involves a shift in ways of thinking, acting, as well as enacting power structures and relationships. The author defines six principles based on living systems theory that affirm and enhance the life-giving properties of systems, arguing that keeping these principles in mind and in adequate balance can contribute to the overall effectiveness of the multiplicity of initiatives needed to bring about large system change. It suggests ways of translating a pattern approach and the attention to the above-elaborated principles into the linear mode of operations of most current institutions, and concludes that leading complex change towards sustainability transformation requires a profound mindset-shift towards seeing the world as patterned reality in nested ecosystems with constantly to be negotiated aliveness aspirations.

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1. The Sustainable Development Goals – A Starting Point for Systems Change

Climate change, environmental degradation, food insecurity, inadequate health care, unequal education, gender inequality, insufficient water and sanitation, non-renewable energy, unemployment, unsustainable human settlements or destructive consumption and production patterns, are all examples of ***large-scale complex systems challenges***. The 17 sustainability goals have been formulated to address these challenges, yet, it is important to remember that complex systems evolve in unpredictable ways because of non-linear dynamic interactions (Allen, 2000; Choi, Dooley, & Rungtusanatham, 2001). Transformation therefore encompasses more than change – it involves a shift in ways of thinking, acting, as well as enacting power structures and relationships (Goepel, 2016; Folke, et al., 2010; Foucault, 1982). According to Geels et al. (2015: 2), it requires "co-evolutionary changes in technologies, markets, institutional frameworks, cultural meanings and everyday life practices". Addressing these challenges means to take ***a systemic approach to leading transformational change***.

A system's view of life can be traced back to the early developments of systems theory in the beginning of the last century (Capra, 2014) when advancements in psychology, biology ecology and quantum physics began to suggest that we need to understand organisms as interactive networks, and a sole focus on matter and structure needed to be complemented by a deeper understanding of processes, patterns, organizations and relationships (ibid.; Jackson & Van den Nouweland, 2005; Jackson, Joshi, & Erhardt, 2003). In other words, the attention of knowing moved from the parts to the whole (Checkland, 1997; Weinberg, 2001). Since then different streams of systems theory in the biological, social and mathematical field as well as in physics have both merged and departed. From a systemic perspective it is essential to know that the world cannot be understood by (only) investigating its components, but by taking a more holistic perspective.

> ***"Transformation encompasses more than change – it involves a shift in ways of thinking, acting, as well as enacting power structures and relationships."***

In addition, a perspective on living systems as self-organizing interconnected and interdependent networks has been taken up by complexity theory (Mennin, 2007; Hammer, Edwards & Tapinos,2012; Stewart, 2002) that advanced the understanding of non-linear dynamics in both living and non-living systems (Hilborn, 2000).

It is suggested here that core insights from systems and complexity theory and a subsequent systemic way of thinking can greatly advance a new approach towards leading transformational change for the 17 Sustainable Developmental Goals. This, however, requires conceptualizing leadership as the collaborative capacity of a collective of diverse actors across institutional boundaries (Kuenkel, 2016) in a patterned approach.

The article argues that transformational change needs to be anchored in principles typical for living systems and that enhance aliveness patterns in socio-ecological systems.

2. Pattern Recognition As a Prerequisite for Sustainability Transformation

A pattern approach to sustainability transformation can be build on an emerging – albeit fragmented - knowledge stream, which advances the hypothesis that the nature of reality and evolution consists of interconnected, co-evolutionary and purposeful structures of interaction whose purpose is to generate and maintain negotiated patterns of aliveness (Weber, 2016; Finidori, 2015, Alexander, 2002). Moreover, the recent advancement of multi-stakeholder collaboration as an approach to systems change, particularly emphasized in the

goal number 17 on global partnerships, encourages even more to look at human interaction systems as a patterned occurrence, dependent on the way cross-institutional interaction is arranged and enacted. More conscious ways to engage with interaction patterns may help understand when and how collaborative processes contribute to the effectiveness and result-orientation of SDG implementation (Kuenkel, 2015).

It is important to remember the insight from systems theory that the process of cognition is seen as the constituting process of life by systems thinkers (Maturana and Varela, 1980; Capra, 2014) and that this process inevitably includes pattern recognition as one of the core functions not only of the human brain (Kelso, 1997), but many living systems alike. Some of the recent breakthrough developments in artificial intelligence are based on pattern recognition technologies (Bishop, 2006). But beyond the world of IT, it is argued here that the ability to recognize and work with patterns can be lifted into at least partial consciousness and this means that a discourse about patterns and their influence on the course of life is possible, both individually and collectively. Such a discourse can enhance the understanding about both the patterns that enhance the shared liveable future of humankind, and those which hinder it. Moreover, the degree to which the patterns that actors engage with are rigid or flexible, can determine the collective learning path. For example, there are numerous accounts where the exposure to a different world-view, a new thinking, a new experience or a new insight tremendously shifted patterns of collective behaviour (Kelso, 1997; Clark, 2008; McKenzie, Woolf, Van Winkelen & Morgan, 2009) for better or worse. Becoming aware of the patterned occurrence of life in evolutionary processes is a cornerstone for recognizing patterns of behaviour, social interaction, and socio-ecological-economic structures.

> ***"A discourse about patterns and their influence on the course of life is possible, both individually and collectively."***

Developing a shared language around them can enable a collective of actors to actively engage and learn from them, which is of particular importance to implementing the SDG at the scale needed.

3. Five Implications for Integrating Pattern Recognition into SDG-Implementation

The view on pattern recognition as a process of engaging with the 17 developmental goals suggests five implications for integrating a systems view of life into leading the transformational change the goals require.

First: It implies that a better understanding of patterns that enhance the vitality of human-ecological systems is needed in the field of sustainable development. Christopher Alexander (1979) described the 'quality without a name', or wholeness in a given space as synonymous with the 'degree of life' or aliveness in such a space. While he referred to an architectural space, recent scholars suggest that degrees of aliveness can also be found within a pattern of human interaction, in the relationship between humans and nature, or in a city space (Jacobs, 1961), in supply chain management, in an educational system, in an agricultural system, or in a political environment.

> ***"Understanding the degree of patterns of aliveness in people, human communities and ecosystems may turn out to be a key leverage point for shifting dysfunctional patterns of interactions into more life-enhancing functional ones."***

In other words, **the question is what kind of pattern of interaction generates more aliveness or less, and for whom?**

The Global Sustainability Goals speak of values for human beings and all other living – and non-living organisms on earth. 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 shifting dysfunctional patterns of interactions into more life-enhancing functional ones.

Second: Promoting skills to recognize and enact life-enhancing patterns of interaction may therefore create an empowering pathway into a more sustainable future. Finidori and colleagues (2015) authors of pattern language 4.0, 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 it may also arise from many different locations, interconnected as networks and networks of networks"(ibid. p.8). From a pattern language perspective, the many social, environmental and economic challenges the world faces can be seen as dysfunctional patterns of human incompetency in interaction. These problems may therefore be corrected by applying principles, which give rise to more functional patterns of interaction. To illustrate, those working towards sustainability goals could take self- and collective responsibility by asking themselves: 'How do we contribute to keeping a dysfunctional pattern in place?' and equally: 'How can we contribute to shifting it?'

Third: The key to implementing a patterned approach is to find a way to collaboratively fit the multiple actors, levels, initiatives, and other pieces of the change puzzle, *together* in a desired direction – as a patterned approach - so that they bring vitality and functionality to overall existing systems, rather than dysfunctionality. The Global Sustainability Goals (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. Although no one really knows how to reach the aspirations represented in the goals, such identifications can foster multiple initiatives, which in turn have a better chance of getting closer to the goal. Furthermore, motivating the actors within these initiatives to see themselves as part of a larger pattern of change and recognize functional as well as dysfunctional patterns will enable them to also understand how they contribute to dysfunctional patterns or how they can shift them.

Fourth: Life has an inherent tendency to create wholeness and to further the degree of life (Alexander, 2004). Living systems theory (Capra & Luisi) as much as recent insights into biology (Weber, 2016) suggest that this inherent urge leads to life always re-organizing into creating more life – even after destruction and chaos, disintegration and damage. For example, over time and left to their own devices without human interference, ecosystems emerge back into the best possible degree of wholeness. Trees and plants in a forest support each other's aliveness (Wohlleben, 2016). In the human realm, even in the midst of brutal wars or natural disasters, people help each other enhance and maintain physical and psychological aliveness. Weber (2016) therefore suggests that life as such is purposeful; it is intentional (Weber, 2016) in the sense that every living being aims to expand and maintain aliveness. Not only humankind is driven by recognizing patterns, creating meaning from them and striving to further their own feeling of aliveness, but the urge to generate and regenerate life – which is more than survival – is one that humankind shares with each other and with the rest of nature (Weber, 2016, Kaufmann, 2016). Hence, it is important in the complex adaptive systems change that the Global Sustainability Goals aim to address, to search for emergent, co-evolutionary *patterns of aliveness*. These interaction patterns can be identified and worked with – and possibly further transformed into more life-enhancing patterns. Such patterns 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.

Fifth: Even if there is an inherent tendency towards aliveness in all of life, yet, there are also often trade-offs between people and between socio-ecological systems, which means that what boosts one system's aliveness can compromise that of another. Such trade-offs inevitably lead to overall compromised or dysfunctional patterns, which in turn, diminish aliveness of the larger system. Water scarcity, environmental degradation or climate change are just a few examples. Individual enhancement of aliveness patterns at the expense of other people or natural systems leads to overall dysfunctional patterns, which then damage or endanger everybody including future generations.

4. Understanding the Aliveness Approach

To better understand the implications of looking at the world's global challenges as patterns that further or diminish degrees of aliveness, it is important to note that a pattern is more than a structure or an order. While the latter suggests a state that is fixed and stable, the concept of a pattern, according to Alexander (2002), implies relational interaction that is permeable, changeable and always in flux. A structure, conversely, is what holds a pattern in place, even at the expense of its functionality, and order is what patterns aim for – an arrangement, a constellation or composition that is most often beautiful, or at the very least functional, if the degree of aliveness is high. The beauty of intact ecosystems is just one example. Seeing sustainability challenges through the lens of 'pattern of aliveness' suggests that many of the challenges addressed by the global goals result from structures put in place – often by human beings - with a mistaken ignorance towards the fact that the trade-offs created as seemingly functional order in one part of a system, cause extremely negative consequences in another part of the system.

> ***"Disempowered sections of the global society will inevitably become dysfunctional centres in the overall pattern, and seek ways to enhance their own aliveness."***

For example, the current economic system has put structures in place that disempower a large section of the global population and strengthen the aliveness pattern of the affluent section of the global society. However, disempowered sections will inevitably become dysfunctional centres in the overall pattern, and seek ways to enhance their own aliveness. Moreover, if they are excluded from the life quality, side-lined from development and cut off from mutual support, they will compromise the overall pattern of aliveness. Subsequently, they will eventually fight for a pattern that helps them regain their quality of aliveness. More recently, the migration of disadvantaged people into Europe is but one example. Understanding a patterned approach will help all actors involved in implementing the SDGs to become aware of the impact of trade-offs on the larger pattern of life on earth. This offers new ways of seeing the 17 SDGs as systemic issues which require systemic approaches to enhance the aliveness of subsystems as much as that of the overall global system.

If the assumption of Weber (2016) holds true that a feeling of aliveness is an irreducible feeling every living being experiences and wants to maintain, then one can assume that the capacity to perceive patterns that are life-enhancing – that contain the 'quality without a name' according to Alexander (1979) – is in principle availability to everybody, or at least can be learned. More widely accessible knowledge and practical skills to recognize and subsequently co-create life-enhancing patterns could become an enormously empowering contribution to the development of humankind in the face of the global challenges highlighted by the 17 Sustainability Development Goals.

Whatever a quality of aliveness consists of, it refers to a recognizable patterned process of interaction and structure in human-to-human, human-to-nature, and nature-to-nature systems. The degree to which such interaction and structures contain pathways to change towards negotiated patterns of aliveness in systems and subsystems can be viewed as the transformational quality (Geels et.al. 2015) of change endeavours, as they become recognizable patterned outcomes for sustainability. Hence, pattern recognition, is a skill that needs to be built for SDG implementation, individually and collectively.

"Knowledge and practical skills to recognize and subsequently co-create life-enhancing patterns could become an enormously empowering contribution to the development of humankind."

5. Collective Sense-Making and Collective Co-Creation

The shift in thinking that the above sections argue for can become a key factor for a shift in collective sense-making and collective co-creation that sustainability transformations need. But this goes beyond the human realm. The biologist and eco-philosopher Andreas Weber (2013) suggests an approach to sustainable development that has, at its core, the conscious concern for, and promotion of, social and ecological ecosystems that feel alive – from nature to economic systems to human communities to individuals. This refers to threatened ecosystems as much as to disenfranchised human communities, and furthermore, connects the self to the large systems that require transformation. In his recent book on the Biology of Wonder (2016), Weber further explores this profound shift, not only in thinking about the world, but also in day to day perception as a cornerstone for a more conscious – and subsequently more sustainable – world-making. He critically notes that – despite the enormous progress in environmental protection, human development and the discourse about a new and radically different economy - a "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. "(Weber, 2016, p 17). What he suggests is that the term sustainability needs to be understood as a functional and continuous process pattern that is life-enhancing.

6. World-Making as Stewarding Streams of Networked Patterns of Aliveness

The experiential subjectivity of a feeling of aliveness therefore adds another element to a systems view of life, as applied to the Sustainability Goals. The concept of aliveness captures individual and collective world-making as a constant stream of complex, yet ordered and networked patterns of which some may be life-enhancing – that is contributing to the feeling of aliveness of living organisms – and others not.

Within the context of the Sustainable Development Goals, the question therefore arises how to steward rather than steer processes that are life-enhancing, not only for the multiple overlapping subsystems of human communities, but also for their surrounding environments and the non-human communities within these.

Yet, if there is a perceived contradiction, between differences in interest, on what aliveness feels like – who mediates and who negotiates? Who decides which patterns are life-enhancing?

These questions hint at a need for a heightened awareness of the larger systems local and global actors operate in. In turn, a patterned

approach could also inform knowledge building around multi-stakeholder collaboration, which may, in its ideal form, become a governance form for stewarding as well as collectively negotiating patterns of aliveness.

Recently, a number of both researchers and practitioners have started to advance investigations into the relationship between sustainability and the resilience or vitality of systems. Concepts like a 'flourishing' future (Lovins, 2012; Waddell, 2016), 'thrivability' of systems (Russell, 2013), 'patterns of aliveness' (Kuenkel, 2016), 'enlivenment' (Weber, 2013; 2016), a 'society of living' (Alvarez-Pereira, 2016), a 'generative economy' (Fullerton, 2015), an 'ecology of love' (Bateson, 2016), 'principles for what gives Life' (Kuenkel and Waddock, forthcoming, Kuenkel, 2016), and many more have emerged. It is notable, that many of the future thinkers who argue that the world needs a new narrative about what it means to be human on this planet – from system thinkers, biologists, philosophers, environmentalist, sociologists to economists - may express the issue differently, but across the board emphasize what can be called a *re-orientation towards human reverence for humanity's participation as one – albeit a conscious actor - in an interconnected self-regulating natural system that is called the world.* Nature seems to be self-regulating, the human community has not – as yet – achieved an entirely self-regulating system that works for 100% of humanity and the planet as whole. The sustainability challenges of our times are testimony to this. It is suggested here that taking a pattern approach and understanding what constitutes 'patterns of aliveness' may become an essential contribution to global and local transformation governance that truly stewards effective SDG implementation.

7. Meta-Level Guiding Principles rather than Prescriptive Action

In the age of the Anthropocene the future of the planet hinges on the human capability to partner with evolution in the attempt to create nested systems of sufficient aliveness for all – humanity and the rest of nature. There are many authors that have identified principles based on livings systems theory's insights that can inform better human co-creation (Weber, 2013), guide an economy in service of life (Fullerton, 2015), foster innovation (Jones, 2014) help leaders to become better partners of systemic change (Capra & Luisi, 2014), model organizational cultures after such principles (Swanson 2009; Laloux, 2014) or allow for organizing the commons as cornerstone of the societies of the future (Bollier, 2012).

Those who do, emphasize the danger of the reductionist tendency of the human mind that may inadequately loose sight of the incomprehensible dynamic complexity of life. Such principles should reflect the above-elaborated 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. For the multiplicity of transformation processes needed for the Agenda 2030 it is more important to understand which conditions or structures enable live to thrive – or in the theory developed here – enhance *patterns of aliveness*. This constitutes a challenge: whatever principles, general parameters or guidelines one extracts from the varied insights of living systems theory approaches, they need to be general enough to not prescribe behavior or solutions, and comprehensible and concrete enough to guide action, transformation and adaptive behavior. More so, if they should be useful for stewarding the large-scale transformation that lies ahead of humankind, they should help guide the recognition of functional or dysfunctional patterns and support the shifting of patterns towards higher degrees of aliveness in a negotiated dynamic balance between and among nested systems in a global society. They need to invigorate and strengthen inherent human competencies to become practically useful for collective sense-making and collective co-creation.

The principles suggested here are intended to mirror life's wisdom in the way that they engender uncounted different forms of applications. The purpose of the principles is translating the insights from the above-elaborated pattern approach based on living systems theory insights into the realm of leading large-scale transformation. Such a framework may also offer a lens for recognizing functional and dysfunctional patterns and create a basis for planning adaptive action.

The self-similarity of smaller and larger systems often goes unnoticed in the realm of large systems transformation, but it may be exactly that self-similarity that can become a key in understanding how to steward multiple smaller aliveness patterns that grow into large systems change (Goepel, 2016).

"The six aliveness pattern principles suggested here must be valid for various levels of human communities, from the individual to organizations, societies and global agency for a transformed world."

Hence the six aliveness pattern principles suggested here must be valid for various levels of human communities, from the individual to organizations, societies and global agency for a transformed world.

8. The Six Principles Contributing to Patterns of Aliveness

The six principles that could engender patterns of aliveness in humanly designed transformational change are suggested as:

Principle 1: Intentional Generativity - life is purposeful and grows ever more complex

The first principle rests on the insight that life is intentional. ***Purposeful generativity*** *has to do with the urge of life to expand and create future. It refers to 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 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 transformational 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), the purposeful and intentional co-creation of complex patterns of increasing aliveness (Kaufmann, 2016). Such generativity, according to Finidori and colleagues (2015), "points at emergent structure and behaviors' that happens in complex adaptive systems. It refers to the 'onset of a new level of functional properties in a system", not necessarily by working directly on the problem, but rather by focusing on its underlying structure system (Finidori et al., 2015, p. 12). 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 (2009, p. 142) suggests that purpose in living systems can be defined as a "preferred hierarchy of values from which decision rules emerge." 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 is the enhanced ability of people to self-organize the condition of their living 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 difference invite to negotiation, as 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 transformational 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.

"For leading transformational 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".

Principle 2: Permeable Containment - life thrives on identity and meaningful belonging

Sufficient definitional 'enclosure' or boundaries that ensure containment and give identity need to be combined with sufficient ability to bring new energetic inputs in and release old ones. ***Permeable containment*** *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 enhances patterns of aliveness****.*

The second principle rests on the insight that life thrives on identity. All living systems need sufficient containment and boundaries for cohesive identities to emerge. Such permeable containment holds generativity in check and creates pathways for change. Weber emphasizes that, in nature, objects are physically distinct, but also in relation to, and mutually transformed by, each other (2016, p. 40). The emerging patterns are composed of contained structures that preserve and repair themselves (p 51). There is an ordered cooperative interplay that creates and holds the dynamics of existence (p. 52). Hence, life is a process of identity creation (p.53). Only the formation of identities makes collaboration between living systems possible, desirable, and functional. Also Capra and Luisi (2014) explain that systems are meaning-making through identity formation. Such formations create a feeling of belonging (ibid. p. 311) and develop identity in relationships (ibid. p. 354). This

concept illustrates the close inter-linkages between principle one and two.

Ashby (2011, p. 202), in articulating the 'law of requisite variety', further notes that "every law of nature is a constraint," 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).

For leading transformational 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.

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The key to the future is to leverage process architectures that build trust, evidence transformation results, and allow for 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 unfolding novelty - the next principle.

Principle 3: Unfolding Novelty - life is generously creative

> *Integrally and inextricably linked with life is the* ***creation of novelty*** *through invention, adaptation, learning, exaptation or other features that engender innovation.* ***For human interaction systems this means that building on the human desire to venture into the unknown and create new pathways enhances aliveness****.*

The third principle rests on the insight that life – while maintaining overall containment - is constantly unfolding novel pathways and new identities. Weber (2016) suggests that life is essentially creative; it self-constructs ever more complex structures (p.64), and creates novelty by avoiding prefigured pathways (p. 81). Similarly, Capra & Luisi, (2014) state that life is highly flexible, always trying out new avenues of manifesting endless forms of creativity. Viewed from a quantum physics lens, the principle of unfolding novelty is essentially indetermined. Quantum systems are built on "superpositions" (Zohar & Marshall, 1994). This means that a variety of possible realities can emerge (see principle of intentional generativity), and all possibilities are existent in the very moment, an undistinguished pool of possibilities with no predictability. As the physicist Schroedinger (as cited by Ho, 1944) states, it is this process of constant interaction

with, adaptation to circumstances and generation of new pathways, or new identities, that creates positive energy or what Schroedinger ultimately called positive entropy or negentropy. This way of taking in energy to stay ordered in new ways and staving off death, is a fundamental aspect of what it means to be alive. Ecological systems are experimenting with novelty, because it needs the new and ever more complex emergence of identities as a way of keeping the whole intact and further overall resilience (Holling, 1973).

"Invigorating a zest for novelty and fostering the ability to recover from disturbances is a cornerstone for the transformation of human societies and for overcoming global challenges."

But there is more to life's drive for novelty – unfolding novelty 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 serves the generativity of the whole, in a vast system of interconnections that keep checks and balances in place.
Invigorating a zest for novelty and fostering the ability to recover from disturbances is a cornerstone for the transformation of human societies and for overcoming global challenges.

While settings goals, identifying indicators and monitoring results, it is important to give up the idea of a stable state to be reached. In the history of human systems, a once brilliant solution to a problem might become the next problem. Hence, an indicator of success is not the result reached, but the potential invigorated – the capacity of a system, a collective of actors to self-organize and innovate around increasing patterns of aliveness.

It means spotting disturbance and disruptive innovation as a way of shifting stuck dysfunctional patterns and fostering experimentation on different levels, in many places, around multiple issues.
This translates in the realm of transformative change such as SDG implementation into the openness for new solutions, the support for social and technological innovations, and the capability to change course when needed. 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 grows in importance. Humans need novelty to keep engaged and developing; ecosystems need novelty within their dynamic nature to keep them alive and vital. Hope and images of a better future, replete with cultural, technological, social, and other forms of novelty, drive people to act constructively rather than destructively as they might under oppressive conditions. Working towards patterns of aliveness means fostering self-organization and experimentation around an aspirational goal while acknowledging that disturbance and disruptive innovation are means of shifting stuck dysfunctional patterns.

Hence, the principles of intentional generativity, permeable containment and unfolding novelty support each other in creating patterns of aliveness. In order to avoid such patterns becoming too dysfunctional, life operates in contextual interconnectedness with a constant communication flow. This leads to the next principle.

Principle 4: Contextual Interconnectedness - life requires diversity in constant adaptive communication

Contextual interconnectedness *refers to the vast communication network of life that engenders constant interaction, reflection, and reaction in endless feedback-loops. It is the capacity to change and evolve as situationally appropriate – either by growing and becoming more complex, or by declining. Contextual interconnectedness helps balancing the whole and the individual as a core principle of life suggests.* ***For human interaction systems this***

means leveraging the human capability to act in networks of networks in dialogue enhances aliveness.

The human faculty to converse and interact, gain insight, communicate, adapt, and adjust behaviour accordingly, is a manifestation of the principle of contextual interconnectedness. Vital living systems are comprised of inextricably interdependent parts, in a constant flow of communication (Ruesch & Bateson, 2006). Weber (2016) suggests that life patterns are self-referential and recursive in the sense that they constantly feedback through interconnectedness and thus influence the overall arrangement of patterns (p. 79). In this way, life creates certain degrees of autonomy of subsystems that then feedback into the whole (p 82), creating a communication system that enables the system to 'talk to itself' (p. 86).

Relationships are a core organizing principle of life (Wheatley, 1999), and communication is the glue that 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 forming a continually adaptive process. This perspective on patterns of aliveness recognizes the inherent complexity of the world around us, including the social systems and organizations, and the increasing communication and feedback features that the new media provide (Haythornthwaite, 2002). The understanding of life as a highly interconnected network in constant communication with recursive feedback-loops has been accelerated by the Internet, and by social media. When globally distributed relationships move to the front (Oshri, Van Fenema & Kotlarsky, 2008; Oshri, Kotlarsky & Willcocks, 2015) it is structured dialogue that allows system participants to understand what is, and is not working (Kuenkel et al., 2011) as it collectively allows them to identify the relationships, rules, and regularities that make patterns come alive.

The world is built on relationship patterns as well as a shared context of meaning sustained by continuous conversations (Luhmann, 1990). 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 suggests that the capability of a collective to engage in 'problem structuring' as a way of understanding the dynamics that hold a system in dysfunctionality, may become a cornerstone for leading transformational change. Like natural system, all human systems, including multi-stakeholder collaboration for SDG implementation, need to balance their autonomy with the rules and relational patterns of the larger system they are part of. A key to the negotiated dynamic balance of functional patterns in nature is diversity, a crucial requirement for the resilience of an eco-system (Folke, Holling & Perrings, 1996) as it allows for systemic resilience combined with complexity (Holling, 1973; Folke et al. 2010). Similarly, large system change initiatives become more resilient as they incorporate diverse elements, approaches, and ideas (Kuenkel, 2015 and 2016).

"It needs further exploration how to accelerate offline and online communication towards faster collective sense-making in building a narrative that helps people to own a more 'alive' future."

The question that needs further exploration is how to accelerate offline and online communication towards faster collective sense-making in building a narrative that helps people to own a more 'alive' future. Evaluation and measurements as tools for feedback-loops need to be reviewed and reinvented to be of service for such patterns of aliveness (Rouse & Putterill, 2003). Yet, the way communication feedback loops through contextual interconnectedness become effective, for 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.

Principle 5: Nested Wholeness - life operates within integrated wholes

> *Life operates with integrated entities that constitute identifiable 'wholes' as* ***nested wholeness.*** *They are always nested into larger wholes, and provide coherence and orientation. A whole is always more than the sum of its parts and cannot be fully understood by being fragmented into parts.* ***For human interaction this means that tapping into the human capability to engage with a bigger picture, the larger story, the greater system enhances systems aliveness.***

The fifth principle of patterns of aliveness, nested wholeness, refers to life's inherent urge to create wholeness, in its varieties of meanings. Living systems need to be considered holistically, not solely from the perspective of their parts as much of science as well as planning do today (Swanson, 2009, pp. 42-43). Swanson defines living systems as wholes - which he describes as purposive open systems. From a biological perspective this includes a system's ability to stay in a dynamic but steady state, having some level of complexity, maintaining structural and 'essential decider subsystems', which allow components to interact in a holistic way so that they cannot necessarily be teased into component parts. This may include cooperation and competition, as well as integration and disintegration. Swanson (2009, p. 143) further argues that living systems theory's core contention is 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 can be understood as various different forms of structure and relationships, connecting multiple levels of wholes. For example, in an ecological system, this could be the integration of species-sites systems and the distribution of species in a certain locations, or the species-species interaction network (Bastolla et al. 2009; Atmar & 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 understanding wholeness rather than fragmentation (e.g., Fullerton, 2015; Weber, 2016; Alexander, 1979; Jacobs, 1961; Bohm, 1980). The primacy of the whole rather than the individual or the atomized part (Fullerton, 2015) is why both Alexander (1979) and Jacobs (1961) focused on whole entities—buildings, communities, or neighborhoods, rather than simply their constituent parts. Among the most relevant conceptual approach to understanding the principle of nested wholeness are those of the quantum physicist David Bohm (1980), and the system thinker and architect Christopher Alexander (2002). In his pattern language, Alexander 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 (ibid., 2002, p.106)." Though Alexander argues that the components of a given pattern language can be added in a step-by-step process, in order to generate the whole, the key is that multiple interacting parts 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' (p.86), yet, at the same time, he insists that "the wholeness comes first; everything else follows"(ibid., 2002). This means, wholeness is enacted, not created, it is accessed, not produced, it is animated, not managed. But it can be constructed or reconstructed, or rather: structure – natural or artificial, that is, human-made, can enhance or reduce wholeness.

Living systems are constituted in a way that the parts only grow and function in the context of the whole; no part could exist independently or would not be affected, if another part changed. To illustrate, quantum physic 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). In a quantum view, each element – abstracted through perception from the unbroken whole -

shows its properties in context, depending on its links, much like organs of a body would reveal their properties depending on their integration into the whole body. Thus, the actualization of an element cannot be separated from its circumstances – from its connection to wholeness. Both thinking and language operate in a similar way. They cannot be separated from their context. While language is already a manifestation of certain thoughts – and can only be understood contextually - thought processes themselves are unpredictably embedded in their potentiality, in the context constituted by experience, events, and memories (Zohar & Marshall, 1994, p. 69).

In addition, quantum physics holds another insight about the principle of nested wholeness: events that are separated in space and time, and that are without any physical or other perceivable connection, can be seen to act together, as if they knew about each other, although no causal factor or information transfer can be established (Bohm, 1980, p. 129). All these phenomena can best be understood when one assumes an underlying totality or an unbroken wholeness that gives rise to quantum systems behaving in a certain way.

With regards to the Sustainable Development Goals, the principle of nested wholeness translates into finding ways of acknowledging that there are multiple layers and overlapping systems in the different elements of a larger system, and that the whole is something different from the sum of the parts. Complex systems, not unlike more complex ways of thinking, include simpler systems and ways of thinking (e.g., Wilber, 1998; 2002; Torbert, 2004). Like fractal patterns (Mandlebrot, 1983), nested ways of interacting between global and local initiatives can be enhanced through connections at multiple levels and with multiple pathways. Attending and contributing to wholeness in the sense of the ever next level collective value (Donaldson & Walsh, 2015), in the way large-scale transformation is designed, will become increasingly important. Plurality, paradexity, complexity, and constant change are becoming the norm in dealing with the global challenges.

"Attending and contributing to wholeness in the sense of the ever next level collective value, in the way large-scale transformation is designed, will become increasingly important."

Managing complexity, ambiguity, with dexterity of approaches in mutual support will be the task for actors in the corporate world, governments, NGOs and international organization.

In the context of the SDGs this would mean that one can begin anywhere in the system, rapidly or more slowly, and in the desired direction or not, from many (groups of) actors working with core elements of memes (Waddock, 2015) and subsequent narratives and stories – as long as most actors keep the larger context in mind. The latter – the human capability to see and connect with a larger picture is a cornerstone for 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."

Understanding patterns that function for the whole as much as for the parts may be a continuously unfolding journey for humankind, but more explicitly acknowledging the need for a continual negotiated dynamic balance between subsystems and larger systems could be crucial step forward. A crucial role in this plays human consciousness. Bohm (1980, p.7) states that it is thought that creates the impression of separateness. It gives rise to further fragmentary thinking like for example the perception of scarcity with its implications of conflict or comparison with its impact on fragmentation and, ultimately again, conflict. In accordance with this fragmented worldview each person is struggling individually, is

thinking he or she needs to fulfil himself/herself and each seeks security and peace (Bohm, 1996, p. 25). Yet, although it feels as if consciousness is individual and thought transferred through communication only, one can also see thought as part of a proprioceptive consciousness, which has a much wider span (Krishnamurti & Bohm, 1986, p. 23). "Consciousness is shared by all human being." (ibid., 1986, p. 23). This insights lead to the sixth principle.

Principle 6: Proprioceptive consciousness - life emerges from meaning-making cognition

> ***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 above elaborations on the relationship between the perception of nested wholeness and the role of consciousness suggest the sixth principle: proprioceptive consciousness. Proprioception is a term that has been defined by David Bohm (1980, p. 75) as an ability to observe thought, while simultaneously thinking and acting. Based on his in-depth research into the quantum world, Bohm proposes that thought, individually and collectively, has to become aware of its consequences, if humankind is to overcome the global challenges. Such awareness generates openness for possibilities, the ability to look at things from many different angles without judgment, and compassion for the individual and the whole (Richards, 2001).

Consequently, a shift in thinking that includes the respect for the integrity and dignity of all forms of life could accelerate a shift in global human consciousness. Transformation towards sustainability is not only a technical, planning or organizational matter, but requires such a shift. In her article on "Leverage points" Donella Meadows (1999), the co-author of the report to the Club of Rome with the title 'limits to growth' (Meadows, et al 1972) suggested "paradigms are sources of systems. From them, from shared social agreements about the nature of reality, come system goals and information flows…" (Meadows, 1999, p18). Meadows assumes that whoever succeeds at intervening at the level of paradigms may find the pathway to transform systems (ibid., 1999). But the key term in her sentence is that the way of seeing the nature of reality is at the cornerstone of human agency – as this informs feeling, thinking and acting. Similarly, Capra (2014) pleas for an understanding of the life process as a deepened perception of reality could become a conscious guiding force in leading transformative change.

Like the indivisible world described in quantum physics (Joos, et al. 2013), consciousness can be seen as a whole of which human thoughts are partial manifestations. Such an understanding would imply that every process of thought is affecting every other process of thought, because thoughts are connected in the implicate order (Bohm, 1980). While the world we see is a projection of this larger dimension, the explicate suborder, is what is present to our perceptive organs, and this means, it constitutes a large degree of our consciousness.

In their dialogue on 'The Future of Humanity' David Bohm and the Eastern metaphysician J. Krishnamurti (1986) explored 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 in the world: difference, disparity, and conflict. Yet, the mind's most extraordinary faculty is also to make 'sense' - to create seemingly coherence, often perceived as wholeness. It is the principle of proprioceptive consciousness that enables living systems, including human beings, to develop such a sense of wholeness. Becoming aware of nested 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 (Rosch et al., 1992). This can only happen through awareness, not of the ordinary kind, but awareness through observation, or mindfulness (Krishnamurti & Bohm, 1986).

But awareness is not only a way of being sensitive to what is happening, both outside and inside oneself, but it is also a way of being alive, of being able to be alert. Awareness is the ability to observe a wide variety of phenomena – both outer manifestations such as nature, the environment, the social fabric, the whole net of events and relationships, but also inner feelings, sensations, thoughts and movements. The key to awareness through observation is, in Krishnamurti's view (Krishnamurti & Bohm, 1986), to stay with reality in every moment, from moment to moment, not reacting, with no judgment, just observing. Both J.Krishnamurti and Bohm believed that the future of humankind requires such a transformation of human consciousness, individually and collectively, in order to break the vicious circle of 'fragmentary thought creating fragmentation and conflict reinforcing fragmentary thought'. But while Krishnamurti (ibid.) assumed that the way forward is only through the transformation of individual consciousness, Bohm (1996) has adopted a different approach. He proposed that there is a transformation of the nature of consciousness possible, both individually and collectively, through communication, particularly through dialogue.

Viewing this from a different lens, the enactment of the principle of contextual interconnectedness, through communication between humans, furthers the principle of proprioceptive consciousness. In David Bohm's view, dialogue can enable people to explore the whole thought process and subsequently change the way the process takes place collectively (Bohm, 1996, p. 9). In dialogue, if it is done attentively, a coherent movement of thought can take place. 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. Coherence in collective thinking process could inspire coherent action, an action, which is more guided by the need of the whole than the fragmented interest of the individual. In leading transformational change towards SDG implementation, structured forms of dialogue at scale could therefore be a collective pathway to not only access deeper levels of consciousness, but also transform memory and open new pathways of possibilities in thinking and acting. In that way, the principle of proprioceptive consciousness greatly supports the principle of intentional generativity and the principle of contextual interconnectedness.

"Noticing that the world is deeply interdependent and interconnected is a first step into accessing a deeper level of consciousness."

9. World-Making in Times of Global Challenges

The SDGs are, probably for the first time in the history of humankind, a potentially impactful step and at the same time a practical instrument towards the realization and awareness of a global fundamental interdependency and interrelatedness in the world. The goals encourage a shift in global consciousness as they pave the way for honouring the dignity of other people no matter who or where they are (Tager et al., 2016), and also according dignity to other natural systems (Holden, Linnerud & Banister, 2016). The capacity to observe while acting and to step into the shoes of other stakeholders is a cornerstone of leading towards globally and locally better functional patterns - towards *patterns of aliveness*. In complex transformational change processes it is often the increasing ability to see why others act the way they act that brings stakeholders back into the collaborative journey (Kuenkel,

2016). On a more profane level, it is human-to-human empathy that emerges when a new narrative emphasizes that human beings are integrally part of an interconnected world-system (Capra, 1996; Capra & Luis, 2014). Raising awareness also for an interconnected humanity is key in the implementation processes around the SDGs. Humankind may be well equipped for a better future, when such a perspective around interconnectedness and interdependence with all of Earth (and, indeed, the Universe itself) became an imperative of economic, business, and sustainability thinking (Hicks, & Waddock, 2016).

How could the insights on the six life-affirming principles - that further patterns of aliveness - inform world-making in times of global challenges? How could they support the transformational aspirations anchored in the 17 SDGs?

The United Nation's Sustainable Development Goals (SDGs) provide an aspirational map for the type of large system transformation (Waddell et al., 2015) needed, if the world's nations and denizens (of all sorts) are to flourish in the future. To bring the idea of aliveness to large system change, it is important to affirm and enhance the life-giving properties of such change systems. Keeping the above-elaborated six principles in mind when developing and implementing initiatives around the Sustainable Development Goals, can contribute to their overall effectiveness and create increasing coherence of the multiplicity of initiatives needed to bring about transformation.

Despite a lack of detailed knowledge on how to reach the goals, the SDGs provide the basis for strong identification with a desirable future. They function as an attractor and mental driver for transformation and resonate with the ***principle of intentional generativity***. They potentially invigorate a sense of future orientation, can contribute to empowerment, and offer guidance for monitored action. The multiple emerging initiatives around the goals, which partly cooperate, partly compete, may need to be seen through the lens of the ***principle of nested wholeness*** so that collectively they have a better chance of delivering their contribution to the goals. The understanding of the contextual embeddedness of SDG implementation activities becomes as important as the mutual support between initiatives. As mentioned, many authors (OECD, 2015) highlight the mutual dependency of the goals, hence attending to the ***principle of contextual interconnectedness*** would suggest seeing those initiatives as part of a diverse change system that requires structured dialogic exchange and iterative learning mechanisms. Yet, it is evenly important to not lose sight of the need for strong bounded, yet permeable identities of collaborating actors, nations or change initiatives. The ***principle of permeable containment*** means that transformation subsystems need to be fostered that create aliveness patterns for certain issues, in certain geographical areas or for certain stakeholders – while simultaneously honouring the connectivity with the larger picture that the ***principle of nested wholeness*** suggests. Structured step-by-step engagement processes are key in implementation as only the quality of engagement leads to the collective action needed. There is an increasing tendency to promote innovation around SDG implementation and tackling global challenges. This invigorates the ***principle of unfolding novelty***. Despite the detailed formulation of 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 is the ***principle of proprioceptive consciousness***. It is often pushed aside into the personal realm, although mindfulness, individually and collectively towards oneself, others and life, is an impactful stepping-stone in large system change. It helps create the needed balance between the individual and the whole and furthers empathy and compassion. It contributes to the paradigm shift towards seeing reality as an interconnected whole.

There is an increasing body of scholars, philosophers and activists that promote such a mind-shift, be it in models for a new economy in service of life (Weber, 2016; Fullerton, 2015;

Kuenkel, 2016; Göpel, 2016; Capra & Luisi, 2014; Lovins, 1977), an attention to the commons (Weber, 2016; Bollier & Watts, 2002), in the unearthing of indigenous wisdom (Calton, Payne & Waddock, 2008), in the recent advancements of communication technologies (Vaishnavi & Kuechler, 2015; Yates& Orlikowski, 1992) or in the reawakening of mindfulness-techniques (Kuenkel, 2015).

10. Towards a New Conception of Leading Transformational Change

Leading complex change with heightened awareness of the larger transformation system as well as the multidimensional challenges of sustainability, needs a profound mindset-shift towards seeing the world as patterned reality in nested ecosystems with constantly to be negotiated aliveness aspirations. The advent of the 17 Sustainable Development Goals already shows that human consciousness has risen to the point that the globality of the challenges has been acknowledged. While negotiated at the UN level, the SDGs have gradually entered the political and administrative arena of every country, to a greater or lesser extent, with many activities and initiatives emerging from civil society to governments to business.

If the SDGs should fulfil their function for transforming the world, and subsequently change the way collective world-making takes place, they need to bring about *patterns of aliveness*, life-enhancement or 'enlivenment' (Weber, 2013). However, the scale of change envisaged in the SDGs - the large system change required – is, as noted above, complex and fraught with wicked problems that can be seen as dysfunctional patterns reducing or preventing aliveness. This means that multiple initiatives at different levels and with different actors will be needed to bring about transformative change that enhances *patterns of aliveness*, almost like islands that connect and converge, and subsequently strengthen each other. Given the nature of both complex systems and wicked problems (Waddock et al., 2015) such change can at best be stewarded, but not controlled. The goals in their global aspiration towards the Agenda 2030, maybe for the first time in history, suggest to see humanity and the planet as a vast living – and alive - ***collaboration eco-system.*** This system needs to function much better than in the past to avoid the often predicted planetary collapse and instead transform to a world that works for 100% of humanity within the planetary boundaries (Steffen et al., 2015). ***It needs to bring aliveness or the question of what enhances aliveness into the centre of attention.*** Change agents can, however, identify and work with life-enhancing patterns of interaction, creating synergies, diversity, and adaptiveness to circumstance rather than rigid, one-size-fits-all approaches.

> ***"The SDGs in their global aspiration towards the Agenda 2030, may be for the first time in history, suggest to see humanity and the planet as a vast living – and alive - collaboration eco-system."***

In that regard, working toward the SDGs goals means accepting humankind's place in the natural world and understanding and working in concert with the ways in which nature creates flourishing environments. It means that the task of leading may require a new focus in the context of overcoming global challenges.

Leading transformational change is no individual task, but rather 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. Yet, this is exactly the point where paradigms may clash, between the approach to transformation resembling a continuity of the fragmented thinking that has led to the global challenges, and the new paradigm where human beings see themselves as an integral part of the earth system.

However, despite the fact that in their underlying intention, the SDG's enhance the principle of nested wholeness, many change initiatives are still in competition with, or in

ignorance of, each other and as a result actions and initiatives are often duplicated. For SDG transformation to become more effective it is therefore increasingly important that change initiatives identify with their role within a large 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 change system as represented by the SDGs.

"Leading transformational change is not an individual task, but rather 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."

Building a vital collaboration ecosystem of transformation initiatives around SDG implementation requires creating an emotionally compelling as well as strategically visible link between different initiatives from e.g. local to global, local to national change system, or national to global change systems. Or said differently: it must be possible to connect with the larger story and see oneself contextually contributing. This does not mean to administratively coordinate efforts, but it means helping actors see the larger pattern and how they are part of a story much bigger than the individual initiative. It means creating spaces and opportunities for change systems to get into a structured conversations with themselves.

Collective sense-making and collective co-creation approaches need to empower a large number of people to recognize patterned realities and make sense of them as basis for action towards patterns of increasing aliveness. Continuously operating feedback-loops can provide iterative learning, and inspire responsiveness (and responsibility) of all actors to foster patterns of aliveness. The challenge is to make the co-creation process in human interaction systems sufficiently conscious and explicit so that it can happen in a more fruitful and constructive way. Approaches to more powerful co-creation can revive or invigorate the essentially human longing to contribute to collective impact (Hanleybrown, 2012; Senge, et al., 2015; Kuenkel, 2016). They need to be applicable at all levels of systemic change.

In this context, the future of leadership is collective, in the sense that rather looking only at individual leadership capacities, working towards a transformed world in a spirit of collective leadership must be defined as the capacity of a group of diverse leaders to deliver their contribution to a more sustainable future through assuming joint and flexible leadership in service of the common good. At the core of such a new conception of leadership is the human capacity to dialogue and transform differences into evolutionary progress. It enables the transcendence of self-centred views, a prerequisite for successfully addressing the challenges of globalization and sustainability.

Four shifts are necessary for more effectively leading transformation collectively to address global challenges:

(1) Shifting dysfunctional patterns,

(2) Taking goals as transformational guidance,

(3) Nurturing emerging potential and

(4) Stewarding nested transformation systems.

Shifting Dysfunctional Patterns

Currently one of the most important leadership tasks is often considered to be problem solving or solution finding. However, such an approach may be flawed when it comes to the complex interdependent and urgent (Kuenkel, 2013) challenges of the global sustainability goals. As a result, an increasing body of transformation literature suggests the need to collectively diagnose imbalanced interaction patterns and how they lead to wicked problems (Bäck & Levay, 2015; Termeer, et al., 2013WBGU. 2011a; WBGU. 2011b; Vermaak, 2011). The practice of

a joint diagnose of the current reality may heighten an awareness of dysfunctional patterns among various actors in human systems. Such awareness could in turn strengthen the capability to actively engage with shifting behaviour towards more functional patterns of interaction - between people and also between humans and the environment (Grimm et al., 2000). Moreover, it is important to see 'solved problems' always as collectively found solutions-in-time, hence regularly evaluating their contribution to a more functional overall and long-term pattern of aliveness is key.

Patterns need to be changed again once they no longer serve their purpose, a subsystem's or the overall system's aliveness, or if they do not fit complex and newly evolving challenges (Kuenkel, 2013 and 2016). As elaborated above, pattern recognition as well as collective sense-making and collective co-creation methodologies will need to become standard competencies for leading transformational change.

> ***"Pattern recognition as well as collective sense-making and collective co-creation methodologies will need to become standard competencies for leading transformational change."***

Taking Goals as Transformational Guidance

Goals as transformation guidance can range from agreements on behavioral principles, to voluntary standards for managing certain issue, to agreed meta-level goals that allow a variety of different implementation pathways (Burke, Wilson & Salas, 2005; Pearson, Goulart-Fisher& Lee, 1995; Guth & MacMillan, 1986). The 17 Sustainability Developmental Goals function as such contextual guidance, with the need to continuously crosscheck interconnections, interdependencies and impacts (Niestroy & Meuleman, 2015), rather than a stable future state or a fixed target to be reached. All forms of goal clarification would then require nurturing the collective capacity to recognize and maintain functional patterns of human interaction. Hence, it is not about reaching a goal or a result, but rather about taking a goal as a temporary guidance in order to achieve a dynamic balance of a better functioning pattern.

> ***"Leading transformational change is not about reaching a goal or a result, but rather about taking a goal as a temporary guidance in order to achieve a dynamic balance of a better functioning pattern."***

Nurturing Emerging Potential

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. Furthermore, looking for existing abilities and stewarding such existing patterns into an emerging pattern shift, or as Burns (2015) puts it 'nurture emerging development', seems to be as important as spotting disruptive ways of shifting stuck patterns. Nurturing emerging potential as a collective leadership task requires asking the right questions and negotiating a pathway into the future collaboratively and co-evolutionarily. It means empowering actors in order to build on existing competencies, enabling them to design and enact a better future together, rather than attempting to impose change from the outside. In addition, building a collective ability could serve both, the individual (or part), and the whole – particularly, if it is guided by global transformation goals.

> ***"Leading transformational change means empowering actors in order to build on existing competencies, enabling them to design and enact a better future together, rather than attempting to impose change from the outside."***

Stewarding nested transformation systems

Conceptualising complex change as nested transformation system may have a hugely empowering effect for multiple actors. Waddell (2016) reports that multiple actors in the renewable energy field started to create new connections and collaborations as soon as they realised that they were all part of a "change system". The fourth shift in thinking in re-conceptualizing leadership as a collective task is therefore to move from taking an often-isolated project-based approach to stewarding systemic, patterned, and nested change initiatives as well as fostering interconnectedness and the relationship to a larger transformation system (Waddell, 2016). Recognizing the nested nature of issues and institutions in an overall complex system, with the reality that multiple actors in diverse places and institutions have varying interests and capabilities, means recognizing that no single initiative or project can 'solve' a problem or address a challenge - because of its very embeddedness. Of increasing importance, such recognition further acknowledges the human agency, which enables conscious choices - to act differently within the complex systems of which people are part and that they can influence. Large-scale transformation can therefore be seen a result of different human, albeit loosely connected, collective action at scale – probably at a scale that cannot be controlled or even coordinated. However, it is important to remember that a small incremental change could count as much as its acceleration or rather its aggregation to systems change (Hinrichs & Kangas, 2003).

"Leading transformational change means to move from taking an often-isolated project-based approach to stewarding systemic, patterned, and nested change initiatives as well as fostering interconnectedness and the relationship to a larger transformation system."

11. Outlook and Conclusions: Marrying Linear and Non-linear Approaches to Transformation

These conceptual shifts in leading transformational change encourage a systemic perspective that is essential for understanding the connection between the whole and the part in SDG implementation. The global goals and the challenges to be addressed require recognition of the complex interplay between systemic interventions for the different goals - as well as between the actors and networks they touch. Seeing the 17 goals not only 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 (Kuenkel, 2016), may advance new thinking and subsequent new practice – that could then become the unstated norm.

At the same time, there is a need to translate the patterned approach and the attention to the above-elaborated principles into the linear mode of operations of most current institutions. Such 'translation work' is important, as currently 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 lie behind the principles. The question arises which approaches, models, tools and instruments can facilitate and ease the attention to and the enactment of *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.

However, there are already attempts under way of approaches and methodologies that invigorate the six principles, implicitly or explicitly. They range from shifting organizational structures (Robertson, 2015) and

collaborative innovation designs (IDEO, 2008; Hassan, 2014) or stakeholder governance systems to leadership approaches built on integrating systemic approaches to transformational change (Senge, 2015; Kuenkel, 2016).

A good place to start would be investigating the increasingly emerging phenomenon of multi-stakeholder partnerships and collaboration, because in their complexity cross-sector and multi-actor settings are already an attempt to address complexity with a complex approach, and to pay tribute to the interdependence of implementation issues. An approach to leading transformational change in such multi-actor settings has been developed and extensively tested by the author. As a meta-level and principle-based guiding structure the ***Collective Leadership Compass*** (Kuenkel, 2013; 2015; 2016) is an example of a change methodology that guides collective sense-making and collective co-creation based on the six principles. Hence, it builds the capacity of a group of people to change their structure of attention and subsequently their collective pattern of thought and action, while taking the six above-elaborated principles into account in six dimensions that are translated into the world of planning as ***future possibilities, engagement, innovation, humanity, collective intelligence, and wholeness,*** complemented by 18 aspects that help leaders diagnose and plan patterns of aliveness.

As individuals and teams carry more and more responsibility in complex multi-actor change initiatives around SDG implementation, the capacity to become constructively co-creative grows in importance. The *Collective Leadership Compass* functions as a roadmap to a new structure of attention - on the individual level, the level of a team and organization, or the larger collaborative system most multi-stakeholder partnerships operate in. It creates a conscious connection between leadership as an individual task and a collective task - the conscious co-creation of new realities. 20 years of experiences in complex multi-stakeholder initiatives around sustainability issues have yielded that such cross-institutional and cross-sector collaboration becomes successful, if actors pay attention to certain factors. They serve as a guiding structure for high quality cooperation management that enhances aliveness in the collaboration eco-system as much as in the intervention system. They can easily be translated into aspects such as joint strategy development, process and relationship management, innovation and learning mechanisms, respect and dignity, dialogue and communication, and attention to the wider context. By using the compass for the strategic management of cross-sector collaboration the success factors get easily integrated and mirror a pattern of aliveness. This empowers leaders and change agents to navigate complex collaboration for transformational change successfully (Kuenkel, 2016; 2015).

The practice in many international and local multi-stakeholder settings shows that enacting these dimensions by paying attention to their joint presence leads to a higher degree of vitality in the human collaboration eco-systems. This does not necessarily mean harmony, but a constructive way of dealing with differences, increased levels of resilience and an easier access to reconciliation as an underlying human trait. The compass helps human competencies to surface through a guiding structure that does not prescribe action, but helps fruitful options to emerge. It strengthens individual leadership, enhances the leadership capacity of a collective and shifts organizations or systems of collaborating actors towards better co-creation.

Beyond such change methodologies, there is a need to review current standard procedures, rules, measurements as well as monitoring and evaluation systems to invite new perspectives on how societal and global transformation towards patterns of aliveness can be designed and measured. Regarding the latter, recent attempts to define well-being might open a pathways to making the idea of aliveness or enlivenment accessible to measuring (OECD, 2014). Over time, success and impact could be redefined with regard to what the adequacy is of an action, a plan, a complex cooperation project or a strategy in its contribution to shifting dysfunctional patterns into *patterns of aliveness.*

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