MAKING WAVES

HOW SUSTAINABILITY EMERGES

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AN INVITATION

As humanity faces arguably the most complex and perilous transition of all time, the stakes have never been higher. The transition to a sustainable future touches every aspect of our civilisation, as calls intensify to "mobilise to save civilisation", we must learn what it means to create a society that is able to satisfy its own needs without compromising the chances of future generations.[1]

This research project sought to address the problem of how sustainability emerges within financial services organisations in Namibia, Botswana and Zambia. In particular I was interested to learn more about how to harness the self-organising capacity which is inherent in all complex systems in nature, as is in organisations. Complex systems in nature demonstrate the tremendous capacity for decentralised self-organised emergent change.

This report presents research findings from a doctoral study conducted in two financial services organisations. Whilst many studies have examined how sustainability can be integrated into a business, less is known about corporate sustainability as an emergent process.

The report provides insight into how corporate sustainability emerges in everyday work practices and what is needed for employees to self-organise around sustainability. This report is designed to assist business leaders to create conditions in which corporate sustainability can go beyond compliance-driven change to becomes a lived part of the business.

"We need a billion new climate activists. Like many of you, I feel I am carrying too much of this load. We need more hands, more heads, more hearts" Peter Kalmus

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[1] Brown (1981), Brown (2009: 261)

THE CHALLENGE

With greater environmental, economic and social challenges than ever before, humanity faces potential catastrophe. Rising global population and declining global ecosystems, growing inequality and dwindling resources are resulting in degradation of crucial ecological systems necessary for the survival of humanity. The potential collapse of complex societies is an increasingly plausible risk[2]. Whilst the emphasis on corporate social responsibility and corporate sustainability in the private sector has grown, there remains a disconnect between corporate sustainability activities and the declining global environment and society[3].

Progress towards corporate sustainability is criticised for not being sufficiently integrated into business models, or embedded in strategic imperatives or culture[4]. Researchers have tended to focus on the integration into particular areas of business rather than considering how sustainability can represent a holistic change the way in which business is conducted. Sustainability requires a fundamental change in the way an organisation functions to have a better fit between the organisation and environment[5]. This requires taking a more holistic view of the organisation to understand how corporate sustainability emerges rather than examining how sustainability is integrated into, or embedded in, particular facets of the business. A complexity approach provides a holistic paradigm needed to achieve this[6].

The scale of the sustainability transition is such that it is likely that only a holistic approach which fundamentally shifts that functioning of all levels of society and business will be sufficient to bring about the changes that are required. With the doomsday clock, which "conveys how close we are to destroying our civilisation with dangerous technologies of our own making", at 2-minutes to midnight, there is no time to waste.

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[2] Diamond (2005), Steffan et. al. (2015), Swilling & Annecke (2012)

[3] Dyllick & Muff (2016), von Weizsaecker & Wijkman (2017)

[4] Mosher & Smith (2015), Valente (2015), Bertels, Papania, & Papania (2010)

[5] Metcalf & Benn (2012)

[6] Baets & Oldenboom (2009), Chapman (2016), Edwards (2009), Wells (2013)

WAVES OF CHANGE

Change can happen in different ways. Traditionally we often like to think of a manager conducting an analysis and then planning and managing the implementation of change. Whilst this approach works particularly well with technical systems, complex systems act differently. A technical (complicated) system, like an engine, is comprised of parts. When things go wrong, we analyse the problem and fix the faulty part. An adaptive (complex) system, like a company, is comprised of parts (such as employees) that are systems in themselves. Complex systems have rich interconnections with many feedback loops resulting in many cause-effect relationships acting on situations.

In complex systems, it is useful to follow an emergent approach to change whereby multiple interactions at a local level between agents in a system result in an oftentimes unexpected change across a system. The school strike for climate movement in 2018 is a recent example of emergence which surged globally as a 15-year old student, Greta Thunberg, protested outside of the Swedish parliament in Stockholm. By 2019, an estimated 1.4 million students from 112 countries had joined the protests and strikes[7]. Rather than a planned change, this movement was driven by self-organised agents (other students), who due to their age, can be considered politically marginalised, yet potentially bearing the brunt of the lack of urgency in addressing climate change. As can be seen in this example, emergence has the potential for exponential change which ushers completely new patterns in the dynamics and functioning of systems.

Emergence is a dynamic property of a system rather than a static feature. It is important to remember that management can't make emergence happen, as it is not a "force that someone can operate"[8]. Seen from this perspective corporate sustainability is cultivated rather than managed. A gardener can neither force plants to grow nor control the weather, but can create a supportive context and respond to dynamic interaction in the system. If there is a lack of rain, the gardener can water, or fertilise as the soil becomes degraded. As an executive who had successfully developed and implemented a group-wide corporate sustainability strategy expressed it:

> "One can see this as planting the seed – cultivating a new topic (sustainability in the business), is not like building a house, it's more like cultivating a garden. When you build a house, you can build according to that plan, and manufacture to specification. Cultivation of new ideas doesn't work like that. You need to be dynamic and patient, working with people's thinking. If a branch doesn't grow out exactly how you wanted to, you can't cut it off completely, you have to plan how bend it in the right way. It's a fluid process of establishing new ideas. You have to be very fluid."

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[7] Shabeer, M. (2019)

[8] Stacey (2010, p.81)

This fluidity is important as emergence involves the dynamic interaction of agents across the organisation or complex system. Since the sustainability transition requires a fundamental change in how we live and work, it is not enough to drive change through the business. Several executives and senior managers interviewed in the research commented that if sustainability behavioural changes are achieved at work, and not at home, then "we can only really do well on paper". An emergent approach to sustainability requires agents (stakeholders) in the system to self-organise around sustainability, which requires that they find it personally meaningful, thereby effecting their interactions with other stakeholders, resulting in new emergent patterns across the organisation.

Since emergence arises from self-organised agents (stakeholders) interacting over time according to simple rules applied at a local level in situations experienced by the agents, it cannot be understood without taking a holistic view (Figure 1a) of the organisation by simultaneously considering intentional, behavioural, cultural and social (systems, processes) domains. Too often businesses focus on only exterior aspects such as performance and the bottom line as these elements are easier to quantify (Figure 1b). To reap the benefit of emergent self-organisation it is crucial to work with the interior and exterior aspects of the business (Figure 1c).
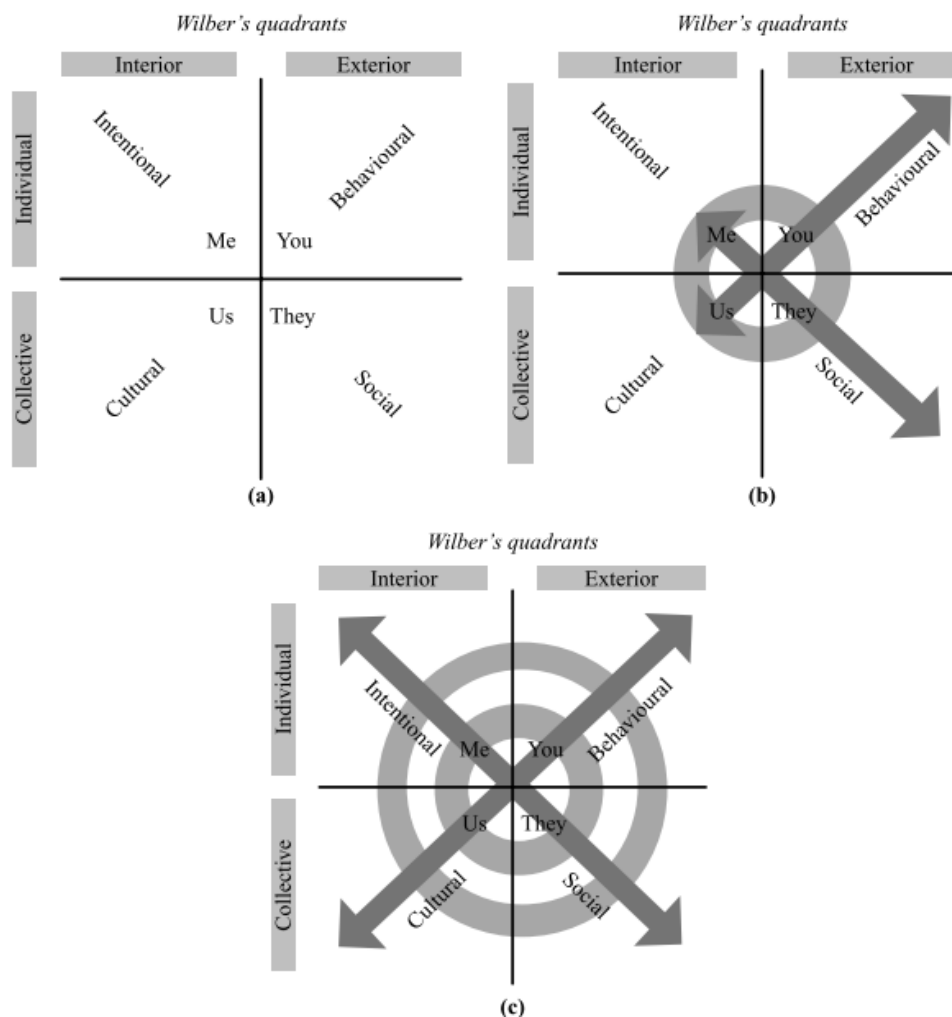

Figure 1: Integral quadrants as developmental domains[9]

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[9] Putnik (2009, p. 264)

A holistic approach creates a context for emergent self-organisation by creating a compelling sense of purpose and value system (cultural) whilst supporting employees and stakeholders to find a sense of meaningfulness in their work. In this way performance can be cultivated in a more self-organised way whilst still organised through systems and processes.

The benefit of an emergent approach to corporate sustainability is thus supporting a fundamental change in the functioning of the system which shifts the self-organising process of agents across the system. To do this, we must work holistically with the system and this was implemented by working across four domains of the organisation. The domains, in Figure 2, are mapped on a holistic model[10] which identifies the interior and exterior, individual and collective domains of an organisation. There are two developmental domains which cover the interior aspects of the agents and the organisation as a collective and two performance domains which cover the exterior aspects of individual performance and the knowledge systems that support collective performance.
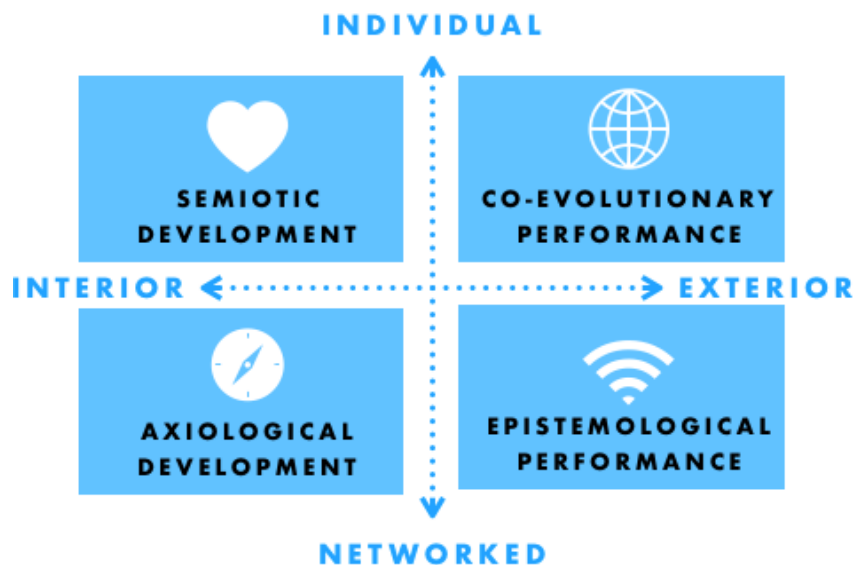

Figure 2: Domains of emergent sustainability

The **axiological development** domain falls in the networked (collective) interior quadrant. Axiology is the system of values that enables agents in an organisation work coherently together. Whilst often values in businesses are simplified to a list of items, an axiological system is a system of shared meaning-making. The system is always in flux, negotiated, hierarchical and worked out through ongoing decision making at all levels in the organisation. A dynamic and lived axiological system can develop an overarching coherence but it also is also varies contextually.

The **semiotic development** domain is in the individual interior quadrant. Semiotic refers to a system of meaning-making (signs) that an agent uses to make sense of his or her world. This is a personal meaning-making system as opposed to the axiological system which is collective and

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[10] The Integral quadrants model (Wilber, 2001)

supports coherent action across multiple agents in the organisation. These two systems interact as agents negotiate how meaning is constructed in their work, that is to say, what is deemed to be of value in the organisation.

The **co-evolutionary performance** domain is located in the individual exterior quadrant. The agent acts based on an interplay between what is perceived as personally meaningful (semiotic) and as being of value to the organisation (axiological). Co-evolutionary performance occurs when these actions simultaneously create value for the organisation, stakeholders and environment (containing system).

The **epistemological performance** domain is in the networked (collective) exterior quadrant. In order to determine whether performance is co-evolutionary in nature, it is essential for an organisation to be informed by knowledge of relevant aspects of the systems in which it is embedded. Since sustainability cuts across disciplines and levels of system, the range of knowledge (episteme) is expanded and in many cases access to relevant data has to be carefully considered to get a clear picture of the extent to which the organisation is acting in a co-evolutionary manner.

These four domains come together to support the emergence of sustainability. This four domain model goes beyond a linear change or compliance-driven change approach to support emergent self-organisation in the system. The next section will explore the ways in which these domains are acted upon.

MAKING WAVES

Rather than attempting to plan and control change, an emergent approach to sustainability invites us to make waves in the system. Tossing a pebble into a pond immediately creates a wave pattern that radiates out in all directions, amplifying waves moving in a similar direction and creating interference patterns as the waves meet other waves moving in different directions in the pond. Focusing on emergence extends beyond controlling actions and outcomes to noticing and nudging patterns in the self-organisation and dynamic interaction of agents in the system.

Making waves is a useful metaphor in thinking about participating in the emergence of sustainability. Emergence arises out of self-organisation across many agents (stakeholders) who interact dynamically acting at a local level according to simple rules. This distributed thinking and decision making has the potential to make a system very efficient. Think of the increase in efficiency that can come about when replacing traffic lights with a traffic circle. Whereas traffic lights are centrally controlled, traffic circles enable each driver to decide when it's safe to enter or exit the circle, following a simple set of rules. Decentralised self-organisation allows for more efficient and effective decentralised decision making across the system where decisions can respond to local conditions, opportunities and constraints.

Wave making is about creating new fractal-like patterns in complex systems[11]. This cannot be achieved through actions alone since we can't control outcomes in complex systems. Four modes, displayed in Figure 3, need to be engaged, which together nudge new patterns of self-organisation. This can be considered a nudge since emergence is ongoing and the nudge acts only as a co-factor in a wider context.
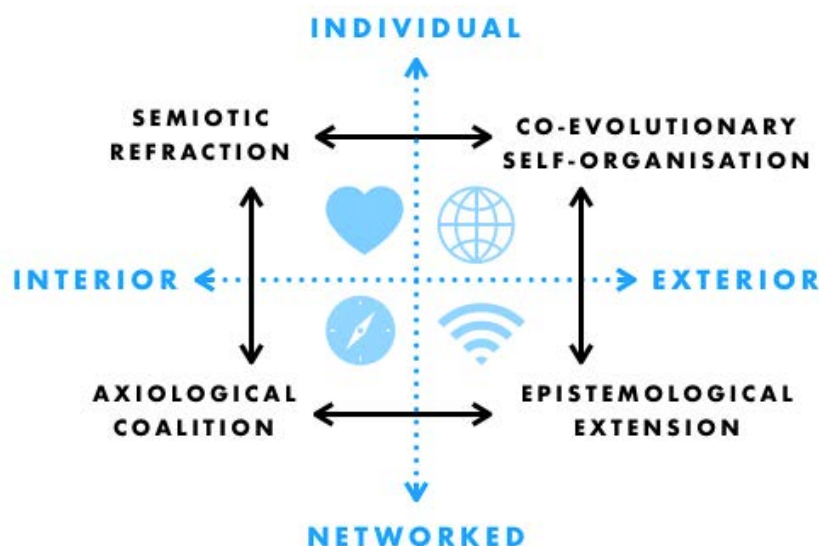

Figure 3: Modes of emergent sustainability

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[11] Fractals are complex patterns that are self-similar across different scales. They are found throughout nature such as in leaves, trees, sea shells and coastlines.

This can be considered a nudge since emergence is ongoing and the nudge acts only as a co-factor in a wider context. Whilst displayed as a cycle, the progression is non-linear and each mode is co-implicative. This means that each mode influences the other, and that the cycle does not necessarily flow in a neat phase by phase process.

Each mode can be seen as an ecological pathway which an agent can follow to contribute to the emergence of sustainability. All modes are needed and come together in process of emergence. Each mode is described in Table 1.

DOMAIN	MODE	DESCRIPTION
AXIOLOGICAL	AXIOLOGICAL COALTION	Actively establishing values-based coalitions, developing a shared perceptual frame through which the sustainability actions are framed.
SEMIOTIC	SEMIOTIC REFRACTION	Semiotic refraction is the process of increasing differentiation in the perception of sustainability.
CO-EVOLUTIONARY	CO-EVOLUTIONARY SELF-ORGANISATION	Co-evolutionary self-organisation is the process whereby an agent actively contributes towards co-evolutionary outcomes.
EPISTEMOLOGICAL	EPISTEMOLOGICAL EXTENSION	The process whereby knowledge of co-evolution is extended through the enaction of sustainability

Table 1: Modes of emergent sustainability

Forming **axiological coalitions** enabled the agents to nudge their organisations towards sustainability. These coalitions are informal interest groups that form around a values-based vision of the future. Over time they can be developed to exert substantial influence. An executive from one of the financial services institutions in the research described how an axiological coalition played an important role in getting sustainability onto the strategic agenda:

> "Conceptually, I think what started to form was a coalition, if you will, of senior people that felt we needed to bring sustainability as a topic to the fore and that there needed to be more dialogue around it. Now that continued throughout 2013 and in 2014 there

was a sufficient critical mass of senior executives who felt we needed to look seriously at sustainability."

Semiotic refraction occurs as agents participate in the emergence of sustainability, perceiving aspects of their professional or personal reality that they intend to transform. Since sustainability is complex, multifaceted and often difficult to perceive, the sense-making process should enhance a clear and differentiated view of sustainability. Metaphorically, this can be imagined as refraction, where the perception is deflected against reality, resulting in an opportunity to enrich the perceptual frames being used. This can be experienced as a moment of realisation as the agent grasps an expanded view of reality. As one senior manager expressed it:

> "Initially I was thinking of sustainability as in environment, renewable energy - that sort of sustainability. But I then realised it was much more comprehensive."

Co-evolutionary self-organisation is the process whereby an agent actively contributes towards co-evolutionary outcomes. In this mode, the agent gets involved in actively addressing sustainability in their decisions and actions. In the words of a senior manager: "so it's changing people's mindset from just sitting back." It turns out that this mode is not easy to activate since it requires the simultaneous activation of the other modes. Another senior manager expressed this difficulty:

> "In our everyday thinking and actions and all of those things haven't been embedded to the point where people apply sustainable practices on a daily basis or at least once a week."

Epistemological extension is the extension of knowledge that occurs through enacting sustainability. The process of taking co-evolutionary action involves an interaction between the initial intention and the process of interaction with reality, whereby "as soon as an individual takes an action, whatever that action may be, it begins to escape from his intentions. The action enters into the universe of interactions and in the end, it is the environment that seizes it in the sense that it can become the opposite of the initial intention."[12] This gap between intention and the result of the action is an opportunity to enhance and extend how the situation is understood.

A crucial part of this extension is a widened time horizon. As a senior manager expressed it: "But the over-riding concerns are the here-and-now so if that long-term thinking isn't there then sustainability is continuing to draw the short straw."

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[12] Morin (2008, p. 55)

CULTIVATING THE CONTEXT

Since an emergent approach to sustainability is based on decentralised self-organisation and emergence cannot be controlled or "driven", the context needs to be cultivated in a way that encourages emergent self-organisation. Cultivation efforts should focus on developing three levels in the organisation, which should extend across all four domains:

1. The **enacted level** focuses on the conditions needed for sustainability to emerge. "Enaction is the idea that organisms create their own experience through their actions."[13] The enactment of sustainability mean that understanding of sustainability arises from the acting towards sustainability outcomes. Conditions can be cultivated which enable the modes covered in the previous section to be enacted.

2. The **embodied level** considers how sustainability is embodied in the habits and practices of an agent, which over time become embedded in the agent in a way that it becomes embodied in their sensor-motor system, thereby showing up in their way of being in the world.

3. The **embedded leve**l refers to coherence between the firm and the systems (environment) in which it is embedded. These containing systems interact with the organisation and this interaction forms the basis for sustainability.

Cultivating these three levels supports emergent self-organisation of sustainability. Whilst organisations often use metaphors such as alignment, whereby the organisation-as-machine needs "cogs" to be aligned. In complex systems such as organisations and social systems, the self-organised nature of the parts means that alignment is not useful and almost never achieved. It is more useful to develop coherence in the organisation. Coherence is the "the degree of order, harmony, and stability in various rhythmic activities, which reflects the regulation of interconnected biological, social, and environmental networks", allowing for "freedom for team members to self-organise whilst maintaining cohesion and strategic resonance."[14] Table 2 identifies dimensions which support coherence:

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[13] Hutchins & Alač (2004, p. 428)

[14] McCraty (2017, p. 2), McCraty (2015, p. 28)

DOMAIN	CONDITION	EMBODIMENT	EMBEDDING
AXIOLOGICAL	**AXIOLOGICAL FRAME** An axiological frame is a shared perceptual lens which constitutes what is perceived as valuable.	**AXIOLOGICAL RESONANCE** The extent to which the axiological framework is embedded in the physiology, mindset and metaphoric structures of the agent.	**AXIOLOGICAL SIGNFICATION** The extent to which co-evolutionary axiological direction is compelling to stakeholders.
SEMIOTIC	**SEMIOTIC INTENTION** The extent to which active engagement in sustainability is driven by a sense of personal meaningfulness.	**SEMIOTIC EMBODIMENT** The extent to which sustainability is personally meaningful and implicit.	**SEMIOTIC SYMBIOSIS** The extent to which what is considered as personally meaningful is enriched by symbiotic interaction with the containing system.
CO-EVOLUTIONARY	**CO-EVOLUTIONARY SCOPE** Co-evolutionary scope is a condition in which agents have a clear mandate within which to self-organise.	**CO-EVOLUTIONARY PRACTICE** The extent to which co-evolutionary activities are embedded in the agent's regular business practices.	**CO-EVOLUTIONARY VALUE** The extent to which value is simultaneously created for the organisation, stakeholders and containing system.
EPISTEMOLOGICAL	**EPISTEMOLOGICAL CONTACT** The extent to which relevant data needed for co-evolution is accessible to agents.	**EPISTEMOLOGICAL NETWORK DENSITY** The extent to which the epistemological network has rich interconnections.	**EPISTEMOLOGICAL RANGE** The extent to which the organisation is informed by knowledge of relevant aspects of the systems in which it is embedded.

Table 2: Dimensions of coherence in emergent sustainability

In the **axiological domain,** an *axiological frame* allows for a shared approach to develop between agents. Thus cultivation of emergent sustainability requires stakeholders to interact to develop an axiological (values) system. When this values system is compelling to stakeholders (*axiological signification*) and resonates with the agent (*axiological resonance*), acting towards sustainability becomes self-organised and habitual. An executive illustrated this:

> "It's (sustainability) not just being done as a tick-box exercise - it's part of our ethos it's who we are. It's interesting because our values and our behaviours all talk to sustainability."

The **semiotic domain** is concerned with the the extent to which active engagement in sustainability is personally meaningful *(semiotic intention),* requiring that sustainability is personally meaningful (*semiotic embodiment*) and that the process of ongoing construction and reconstruction of meaning is infused by interaction with the containing system (*semiotic symbiosis)*. An executive pointed out that teaching about sustainability doesn't have the required effect. Instead he suggested that: "It starts with the basic practices of caring about the environment….It starts with that and once that takes root in the individual, then sustainability becomes real throughout the whole organisation. So it has to eventually become an insight-out approach."

It is important, when cultivating emergent sustainability, to distinguish the semiotic domain from the axiological domain as it is the interaction between the shared organisational axiological system and personal system of meaning-making (semiotic) that result in emergent co-evolutionary self-organisation.

The **co-evolutionary domain** shows up for the agent in a *co-evolutionary scope*, which is the mandate within the agents can act towards sustainability outcomes in the context of the organisation, whereby *co-evolutionary value* is created for the organisation, stakeholders and containing system (environment.) Agents should be encouraged to incorporate sustainability actions into regular business and personal practices (*co-evolutionary practice)*, as it is through the daily actions that sustainability becomes part of an agent's mindset and routines. An executive emphasised the importance of understanding how each person's role contributes:

> "It doesn't touch my heart as it would have if I know that the role that I now do contributes to the overall agenda from a sustainability perspective. So that's the sort of line we must be drawing. I've got to understand how my role impacts on the sustainability agenda.

The **epistemological domain** is crucial to determining the extent to which actions are sustainable in any given context. Since sustainability is a moving target, agent must have *epistemological contact* to be able to determine the viability of sustainability actions. Epistemological contact means that relevant data needed to guide sustainability actions is accessible and understandable to agents. To be useful, knowledge needs to be developed into a richly interconnected network (*epistemological network density*) that can be efficiently and effectively accessed. A widened *epistemological range* is also useful as sustainability challenges are complex requiring the application of multiple methodologies. A middle manager referred to the need to move beyond the sustainability targets to grasp "the big picture…to get all the information before you take a decision."

Coherence develops across these domains and dimensions, and enables emergent sustainability. Sustainability can be cultivated by developing the dimensions in this framework. The next section will focus on how groups of agents interact in the process of emergence.
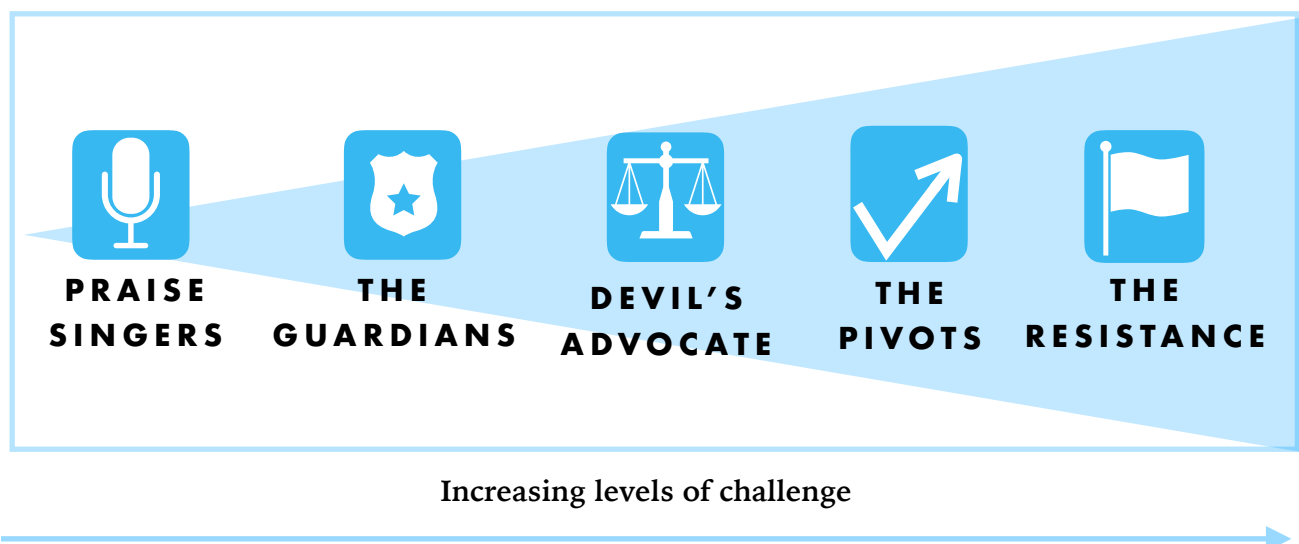
ECO-TRIBES

Sustainability emerges through many waves and in many ways simultaneously. Different interest groups perceive and act collaboratively and coherently which create diverse voices in the organisation. We might talk about these interest groups as ecological tribes (eco-tribes) which have a different view of what it means to perform sustainably. Companies, as complex adaptive systems, are intrinsically self-organised. Each employee (agent) has a particular worldview with particular aspirations and views, which organise their decision making and action.

Navigating the transition to a more sustainable future requires dialogue across interest groups within and outside of the organisation. The data analysis (self-organising maps) resulted in clusters being identified, which are described as eco-tribes. An eco-tribe is an interest group within the business which has a relatively coherent collective view of the business. Negotiating sustainable solutions "requires the cooperation of as many perspectives as possible"[15]. Each eco-tribe has a different set of concerns and aspirations which serves to direct their self-organisation in the business. These orientations can be described by the level of challenge and differentiation in their perspective. Each eco-tribe is shows in Figures 4 described in Table 3. Note that the level of differentiation between axes, for the most part, tends to be higher as the view gets more critical.

Increasing levels of challenge

Figure 4: Eco-tribes

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15 Mickey, Kelly, & Robbert, (2017, p. 12)

| ECO-TRIBES	PROFILE	FUNCTION
PRAISE SINGERS	The praise singers have very high ratings and relatively undifferentiated ratings. The praise singer role reminds people of their history and legacy. This cluster had lower levels of education and higher representation from junior management and branch network as opposed to head office. This interest group was much more prominent in Case A than Case B. The risk of high prominence of this interest group is an over-optimistic view of the organisation.	The praise singer role functions, similar to a court jester role, to perturb whilst honouring and unifying.
GUARDIANS	The guardians are the mainstream voice in the organisation who protect and nurture the status quo. The cluster had slightly higher representation from the branch network and female respondents. A largely undifferentiated view runs the risk of supporting without critical consideration of the status quo.	These agents from the mainstream view in the organisation.
DEVIL'S ADVOCATE	Agents adopt a critical view of the mainstream. There is a moderately differentiated view which follows a similar pattern to the mainstream. The devil's advocate stimulates debate by countering a point of view, without being committed to the opposing viewpoint. There is a slightly higher representation from male respondents in this cluster.	Participates in the mainstream whilst adopting a critical stance towards.
THE PIVOTS	This interest group had the most differentiated view across both cases. This interest group was well established in one case and still an outlier in the other. high differentiated view of the pivots, with similarities with various other clusters opens the potential for this cluster to pivot between the views of different clusters. There was a strong representation from respondents from head office, and those with a first degree.	Creating dialogue between different interest groups.
THE RESISTANCE	Agents have the most overall critical view, with a more differentiated view of the organisation. Agents in this cluster tended to have higher levels of education, longer tenure and middle to senior management roles. Agents from this cluster exert a covert or overt intellectual resistance seeking to influence the organisation whilst highlighting key concerns. This cluster, whilst being critical acknowledged progress to sustainability.	Critique and influence mainstream approach whilst acknowledging progress.

Table 3: Eco-tribe profiles

The average weightings (%) of each cluster (eco-tribe) are displayed in Figure 5. The guardians can be seen to represent the mainstream view (42%) which is largely supportive and undifferentiated, as is the even more optimistic praise singers (24%). This leaves the remaining 34% of respondents to disturb the status quo. Whilst the more supportive eco-tribes are important to stabilise progress through mainstream support, it is unlikely that these eco-tribes will actively perturb and shift the system.
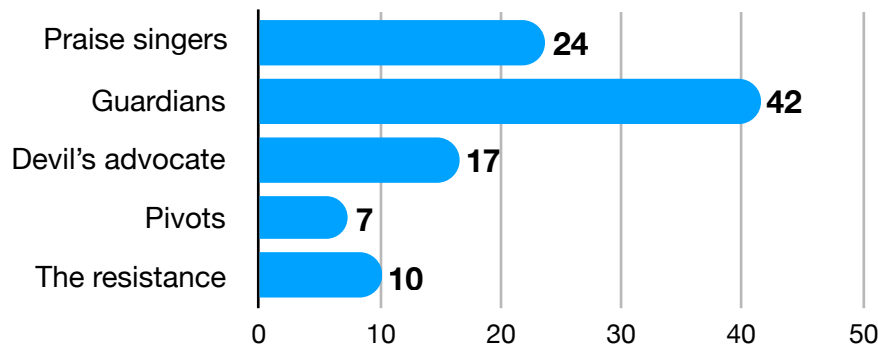
Figure 5: Cluster weights (%)

It is important, therefore, that organisations encourage critical reflection and a longer term view of the organisation. It should be remembered that the impetus for emergence in sustainability is likely to come from minority voices found in the devil's advocate, resistance and pivots. Whilst the very supportive and optimistic interest groups didn't differentiate greatly between the measures, there was still a subtle acknowledgement of progress towards sustainability. It is likely that large proportions of the respondents in the organisations studied still have a low level of awareness of the extent of the transition to a more sustainable future. From the interview data, it would seem that these eco-tribes may have an over-optimistic view, and this runs the risk of inhibiting corporate sustainability due to employees not recognising the extent of the transition to a more sustainable future.

Building the awareness of employees is not necessarily a matter of education, but rather of construing the personal meaningfulness of sustainability initiatives. This needs to be coupled with access to relevant data and feedback on the co-evolutionary processes. The outlying eco-tribes display provocative perspectives which emphasise strengths but also boldly display concerns about the innovation axis in Case A and the leadership axis in Case B. Many interviewees could relate to these concerns. Outlying eco-tribes have the potential to influence or nudge the system.

SUSTAINABILITY COACHING

Sustainability emerges through the interaction of self-directed agents across the system. Since emergence cannot be controlled or changed in a linear sense but only cultivated through creating the appropriate conditions, it is useful to consider a coaching approach to support it. In this context, coaching is focused on supporting emergence rather than focussed on pre-determined objectives of the coachee, as this keeps the coaching focused on the part rather than the whole. Emergent coaching provides a holistic response to emergent self-organisation by cultivating coherence between different interest groups (eco-tribes) in the organisation.

In this study, the organisation was assessed holistically using the Cassandra model[16], which measures eight axes. The scores are shown on a scale of 1-6, with 1 indicating strongly disagree and 6 indicating strongly agree to positively phrased statements. The mean scores per case are displayed in Figure 6. Clusters were identified in the data using a form of artificial neural network analysis called self-organising maps.
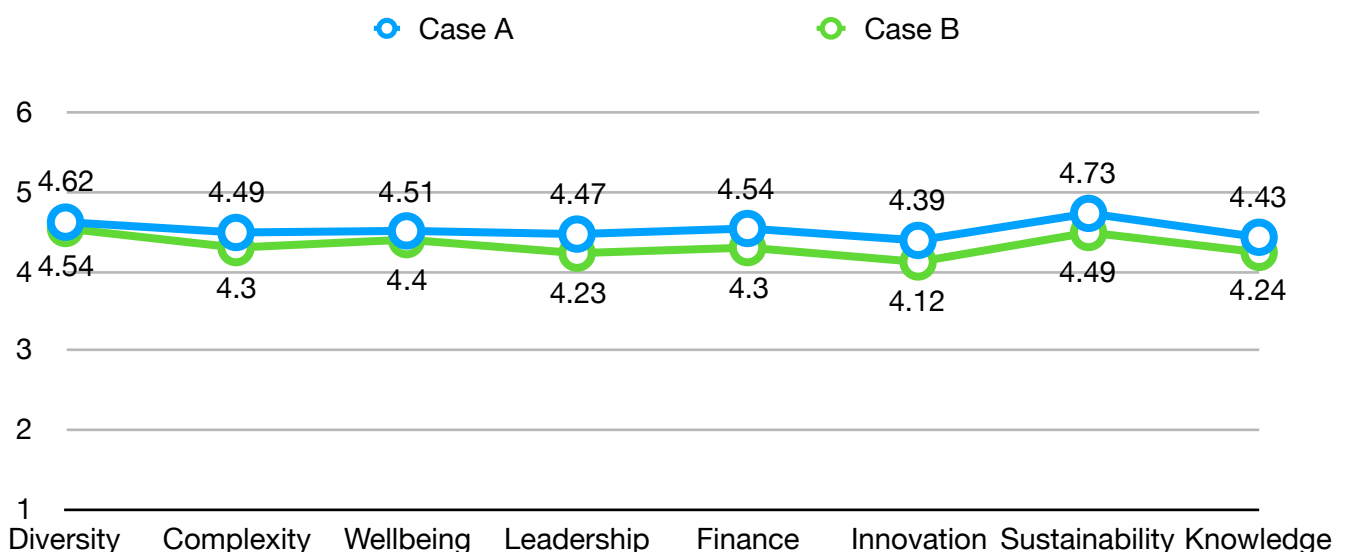
Figure 6: Mean scores per case[17]

A very similar rating pattern can be seen in a mean scores, with Case A performing marginally better than Case B across all axes. Sustainability can be seen to be emerging alongside sustainability and innovation in both cases. To support emergence, the coach is less interested in the average scores, and more interested in cultivating zones of coherence between different eco-

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[16] Baets & Oldenboom (2013)

[17] Axis names have been shorted. For full names see the appendix.

tribes (interest groups) by bringing these groups into dialogue. It is from this process that the coaching agenda, whether coaching individuals or groups, emerges as the future is anticipated.

Figures 7 and 8 display the mean scores for each case alongside the scores for each eco-tribe. Zones of coherence are marked in grey and indicate where the views of different eco-tribes come together. These represent opportunities for development through coaching. Interestingly coherence is predominantly found in the finance and sustainability axes in both cases.
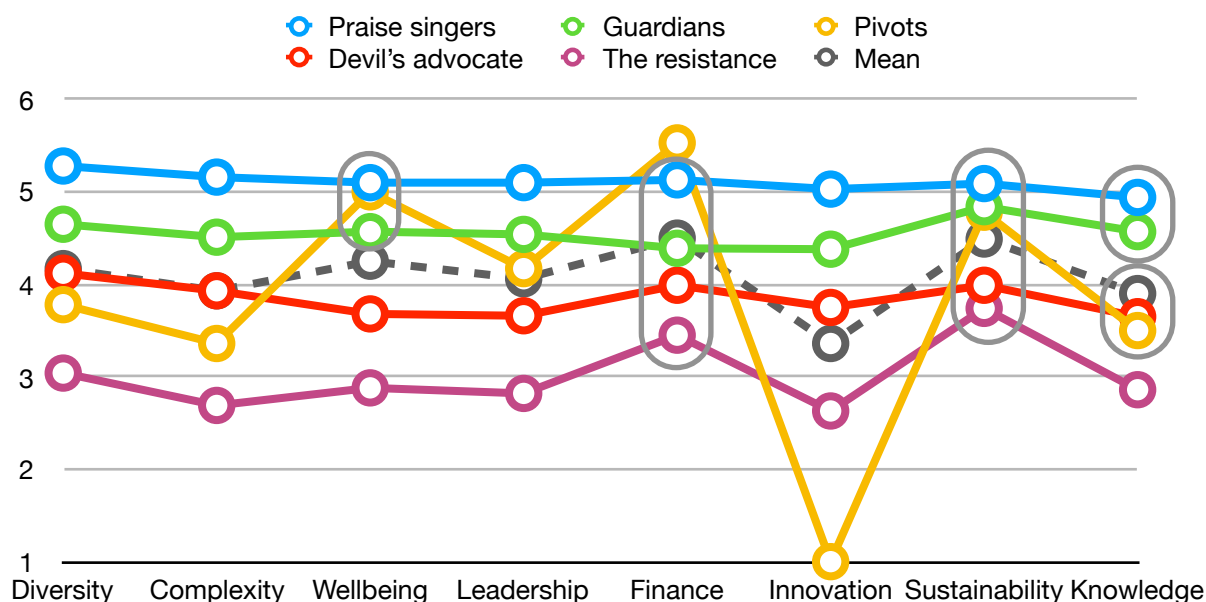
Figure 7: Case A
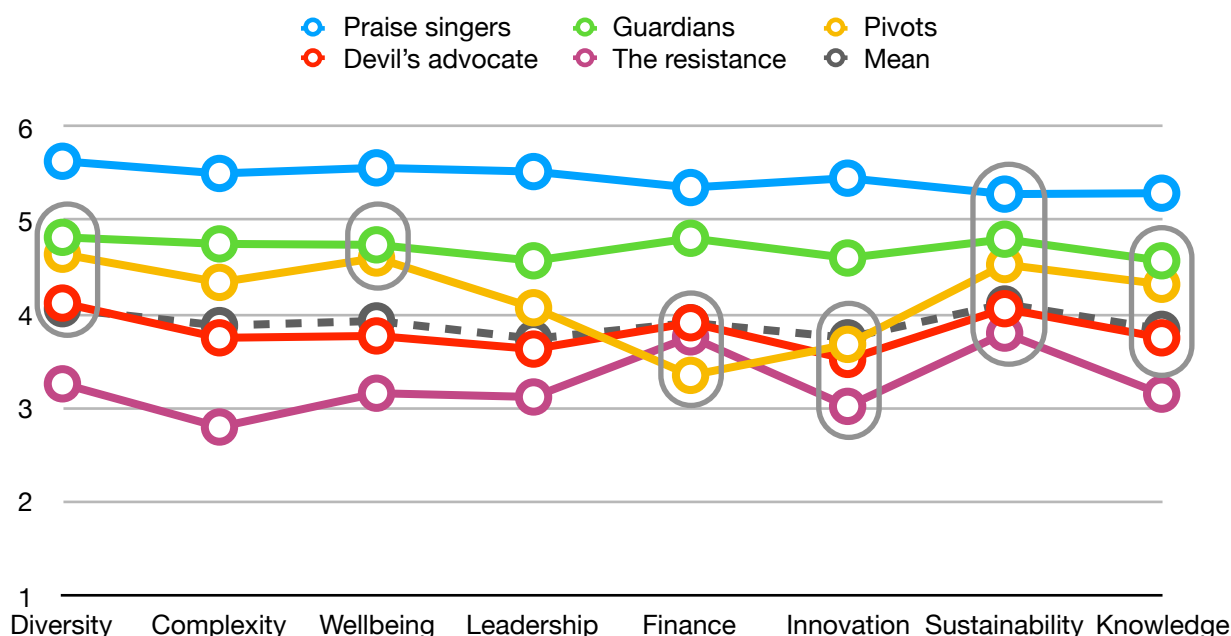
Figure 8: Case B[18]

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[18] An outlying cluster was omitted due to low cluster weight and being localised to Case B.

Some zones of coherence spread across an entire axis (sustainability in both cases, and finance in case A), whilst others are localised across two or three eco-tribes. These zones represent opportunities for dialogue to foster axiological coalitions in support of co-evolutionary self-organisation.

The relative prevalence (weight) of each of these clusters (eco-tribes) is an important consideration for the emergent coach. The cluster weights are displayed in Figure 9. Case A has a relatively high proportion of optimistic clusters (Praise singers = 27%; Guardians = 40%) which interviewees from the study interpreted as inconsistent with the current state of the organisation. An emergent coach would be curious about this, and seek to build trust and safety to allow honest conversations and encourage a dialogue between the various views. Case B shows a higher representation from more critical clusters (Devil's advocate = 29%, The resistance = 11%). Rather than judging these views as 'negative', the emergent coach adopts a stance of curiosity and supports these interest groups to express their views in dialogue with the others.
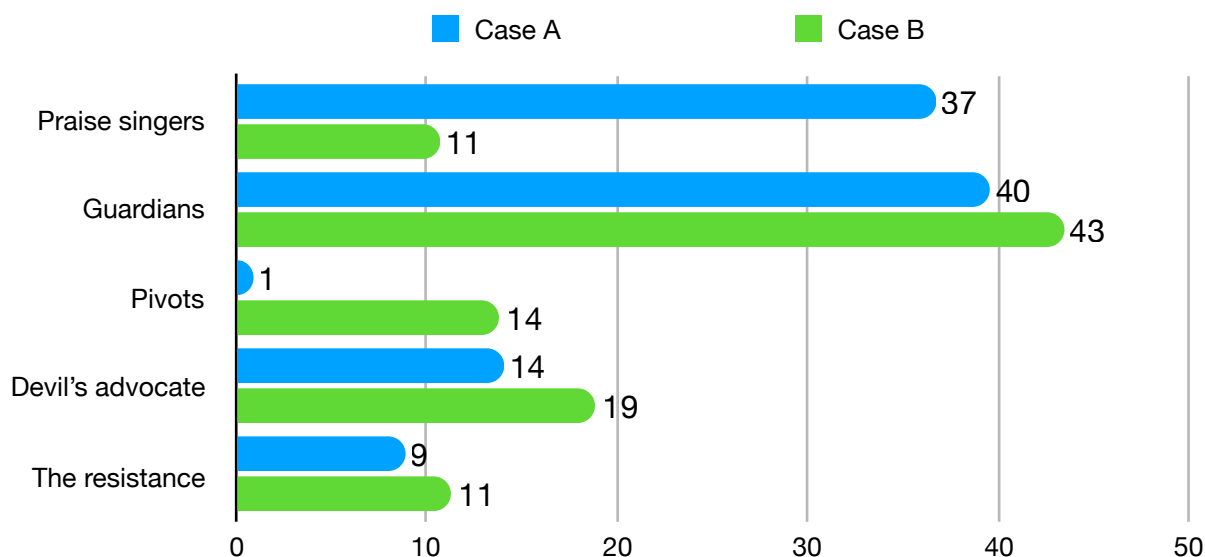
Figure 9: Cluster weights (%)

This approach avoids the reductionism of only considering the sponsor or executive's view and opening to a more complex view of the organisation. It is important that the assessment is holistic, involving both interior and exterior dimensions across multiple levels of system. A diversity of perspectives are useful to enrich the coaching dialogue and enhance the opportunities for learning. The emergent coach goes beyond linear step-wise approaches to change, rather seeking to cultivate sustainability in the axiological, semiotic, co-evolutionary and epistemological domains. The activation of modes is supported by creating supportive conditions whilst embodying and embedding sustainability. This in turn creates a context conducive to emergent self-organisation. This is a decentralised approach in which self-organisation has the potential to create ripple effects across the organisation. Emergent self-organisation takes place as coherence develops across the axiological and semiotic domains. What is personally meaningful (semiotic) is expressed collectively as coalitions develop around shared values (axiology). The emergent coach nudges actors in the system into dialogue allowing for zones of coherence to be discovered and created, and enriched through knowledge (epistemological contact). Thus the emergent coach goes beyond

an interest in sustainability outcomes to consider all domains as part of a holistic picture of the organisation. The role of the coach is to support each narrative to be made explicit and expressed.

The coach should take care to select the appropriate levels to work at. If the coach is seeking to support co-evolutionary action, the coach can support the agent(s) to apply the modes effectively. To encourage self-organisation, the coach can support the enhancement of the conditions. To develop the capacity of agents, the coach can support the embodied dimensions, and to support coherence between the organisation and containing system, the coach can support the embedded dimensions.

The coach should be sure to focus on both that agent and group, but also pay attention to supporting the overall process of emergence. This means observing, providing feedback and opening spaces of dialogue for different interest groups to reflect on a holistic level. This allows for zones of coherence to develop through the interaction of order, disorder and organisation, as displayed in Figure 10. This implies that the process is not neat and orderly, but a messy and sometimes uncomfortable process.
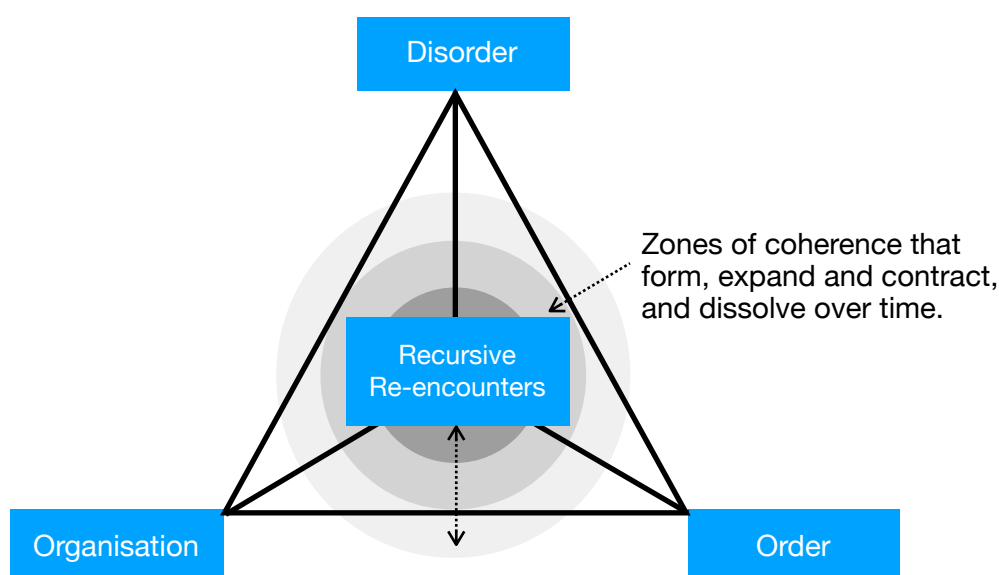
Figure 10: Zones of coherence

The coach should anticipate that the process will necessarily involve the interaction between order, disorder and organisation, and therefore not be put off by disorderly elements of the process as this is important to allow for the re-oganisation required for corporate sustainability to emerge. The coach should support the development of zones of coherence in which the interaction between agents results in value-creating co-evolutionary outputs. It is thus crucial that managers and sustainability practitioners work holistically, rather than only focusing on implementing sustainability interventions. Furthermore, adopting the role of emergent coach is useful in supporting self-organisation. Whilst this approach may be more time intensive in the beginning, supporting sustainability through a self-organised approach ultimately is more effective and efficient.

COACHING METHODOLOGY

Whilst there are many different ways to support the emergence of sustainability, a coaching approach is particularly useful. As as has already been emphasised, an emergent approach to coaching works with individuals and groups in a holistic manner cultivating the conditions to encourage emergent self-organisation. For coaching to support sustainability, it is crucial that the coaching outputs are co-evolutionary, adding value to multiple stakeholders as well as the environment. Since what it means to be sustainable is continuously changing, it is important that there is an ongoing process of learning and generation of knowledge.

This requires an evolution of contemporary coaching approaches. Emergent construct coaching is a suitable coaching methodology that has been developed as output of this research project. This coaching methodology can be applied within organisations by leaders and internal coaches as well as by external coaches. One of the issues with contemporary coaches approaches is the separation of modalities such as individual and group or team coaching. Whilst coaching supports individuals and teams to achieve results, all too often coaches end up making the parts work better, rather than working holistically with the system, thereby supporting emergence in the system. Emergent construct coaching invites coaches to work holistically integrating work at different levels of system.

With governments, corporations, leaders and civil rights organisations across the world declaring a climate emergency there is increased global recognition of the magnitude and urgency of the sustainability transition. This however does not necessarily mean that it is identified explicitly in the negotiated coaching agenda. A coach might thus be working either in a situation where sustainability is formally part of the coaching agenda or in situations in which a co-evolutionary emphasis can be introduced in the questioning orientation through the coaching process. This is not to attempt to impose the coach's agenda but rather to ensure construing is systemic and to ensure that ethical reflection forms part of the process.

An emergent construct coaching approach works with the construing of agents and interest groups (eco-tribes) in the context of the complex adaptive systems within which they participate. The aim is to create zones of coherence in which emergent self-organisation yields co-evolutionary outcomes. This happens when sustainability becomes a meaningful personal and shared endeavour in a system.

"Sustainability can become a deeply personal quest for meaning in life and work" **Wayne Visser**

The coaching approach is implemented through coaching the four modes of emergent corporate sustainability. The role of the coach is to support the development of zones of coherence within and between agents in complex adaptive systems. The coach should ensure that all domains of emergent sustainability (displayed in Figure 11) are actively worked with.

The axiological development domain is used to create a context in which encourages coherent emergent self-organisation across multiple agents in the system. The coach works with groups to identify emergent constructs, that is bi-polar dimensions that describe the collective purpose which the self-organisation serves (see Annex 2.) These act as distinctions which make the purpose explicit.

SEMIOTIC DEVELOPMENT

How is that meaningful to you? What makes that worth doing for you? What will keep you at it in the longer term?

CO-EVOLUTIONARY PERFORMANCE

What can you do that will create value for you, the organisation, its stakeholders and environment? How will this effect future generations? What is the impact on the environment?

INDIVIDUAL

SEMIOTIC REFRACTION

CO-EVOLUTIONARY SELF-ORGANISATION

INTERIOR

EXTERIOR

AXIOLOGICAL COALITION

EPISTEMOLOGICAL EXTENSION

NETWORKED

What shared value can you act on collaboratively in this situation? What values do you need to keep in mind as your address this?

How has your understanding of the situation developed? What new knowledge do you have? How can that be of use to others?

AXIOLOGICAL DEVELOPMENT
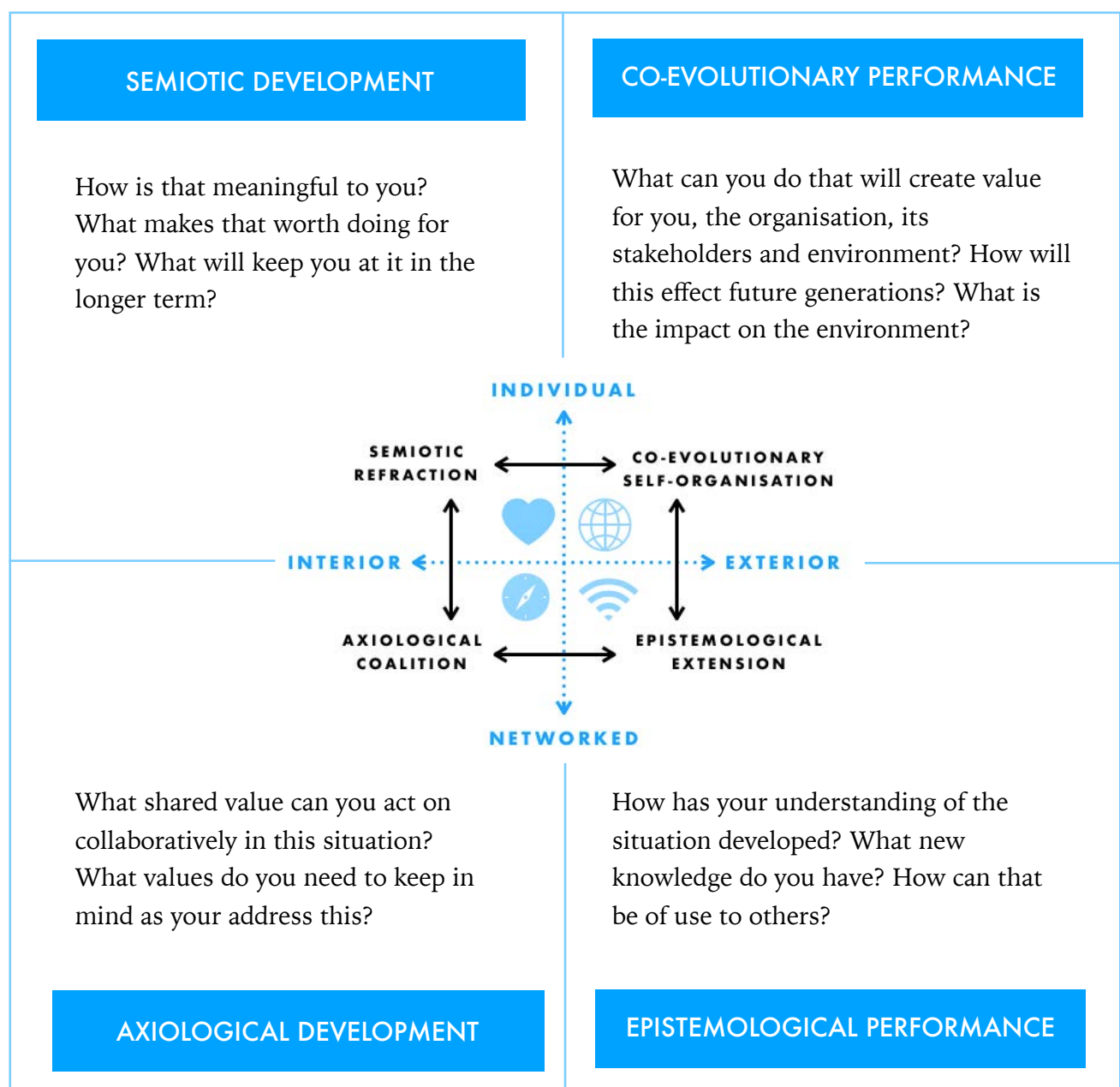
EPISTEMOLOGICAL PERFORMANCE

Figure 11: Coaching domains

The semiotic development domain is necessary to support self-organisation. Since emergence arises from the interaction between agents in a complex system who self-organise by anticipating events, it is important for the coach to provide opportunities for agents to personalise the axiological context. This develops zones of coherence between organisational sustainability practices and personally meaningful thereby helping to cultivate emergent sustainability. The coach moves back and forth between the individual and group levels to cultivate this coherence. The coach should not seek for total coherence or uniformity but rather seek to facilitate dialogue between different interest groups (eco-tribes) seeking to amplify and support a wide range of perspectives in the coaching dialogue.
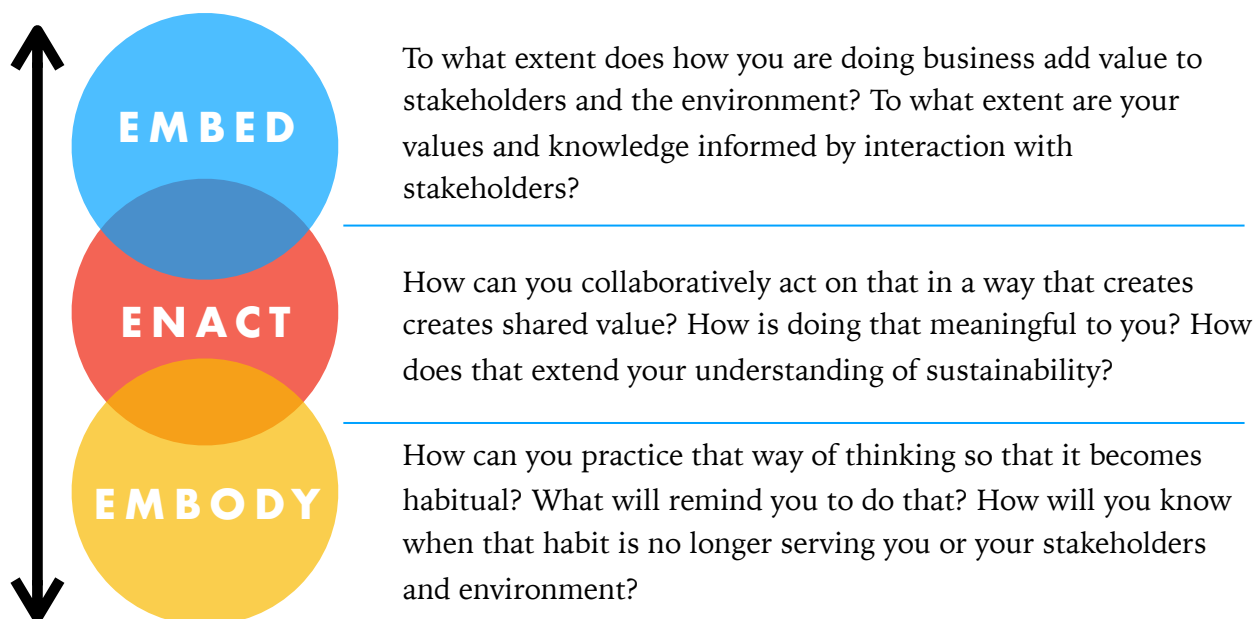
The development of coherence can be illustrated from an example of an employee wellness initiative in Namibia in the education sector where the political struggle for independence was used as an axiological context to frame HIV and AIDS prevention campaign amongst educators and education managers. After an experiential reflection back on the struggle years, participants were asked to reflect on what they learnt in the struggle that could assist them in the 'new fight for independence', the fight against HIV and AIDS. It should be remembered that this occurred in the height of the HIV pandemic. This framing allowed for the emergent constructs which were at the same time relevant at personal and organisational levels. In one education region, this resulted in a record number of employees volunteering to be tested for HIV in a highly stigmatised context. This approach framed this very difficult situation in a way that built hope and mobilised existing skills and resources.

In the co-evolutionary performance domain the coach supports performance in a very specific manner. The performance of the agent is considered alongside the systems in which he or she interacts with, as well as the environment. The approach to performance is reflected on to ensure the output is co-evolutionary, that is, enabling value to be created for agent, stakeholders and containing system. This means that coach questions from a wide range of perceptual positions which extend beyond the current organisation and supply chain. Marginalised stakeholders such as disenfranchised communities, future generations and other species should be considered where relevant. The agent(s) should be considered in determining the range of stakeholders to be considered. The coach should challenge the agent(s) to widen their perceptual frame.

Epistemological performance domain focusses the coaching on the generation of knowledge through the co-evolutionary process. It is not sufficient to apply knowledge, the coaching should focus on the extension of knowledge. This can be built into the process through explicitly focusing on data generation as a collective endeavour. This should involve either monitoring progress using quantitative metrics or collecting qualitative stakeholder feedback. It is important to ensure that there is epistemological contact in order that the agent(s) can determine the level of progress. Since sustainability is continuously changing it is important for the data collection and analysis approach to be continuously updated.

An emergent construct coach works holistically and systemically, and this requires that the coach questions at three inter-related levels, as displayed in Figure 12. This enables the coach to continuously create links between the systems in which the agent is embedded and the action of the agent, whilst gradually supporting the embodiment of practices in the agent. Ongoing work across the three levels supports co-evolutionary self-organisation through building coherence across the three levels.

The embedded level focuses on the extent to which sustainability is embedded in the business, and this requires interaction and value exchange between the the agent, organisation and containing system. The enacted level focuses on action as central to the development of sustainability at the level of agent. Since "the human mind emerges from self-organising processes that tightly interconnect the brain, body and environment at multiple levels"[19], the capacity for sustainability emerges through action which connects the agent with his or her environment. Finally, the embodied level reminds the coach to focus on internalisation of sustainability through work and personal practices. Given that the "majority of cognition happens below conscious awareness, such as neuronal processes, which are not accessible to introspection"[20], it is important to focus on the development of new habits and routines.

EMBED — To what extent does how you are doing business add value to stakeholders and the environment? To what extent are your values and knowledge informed by interaction with stakeholders?

ENACT — How can you collaboratively act on that in a way that creates creates shared value? How is doing that meaningful to you? How does that extend your understanding of sustainability?

EMBODY — How can you practice that way of thinking so that it becomes habitual? What will remind you to do that? How will you know when that habit is no longer serving you or your stakeholders and environment?

Figure 12: Levels of coaching

The overall process of coaching can be structured using the ADAPT coaching process model displayed in Table 4. This is a guide to support an emergent process but should not be construed as a linear step-wise process. The process of emergence occurs, as has been presented, through four

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[19] Thompson (2007, p. 37)

[20] Lakoff & Johnson (1999)

modes which unfold across different levels of system simultaneously (see Annex 2 for further guidelines.) The ADAPT model should thus be considered alongside the other models presented in this report, and applied as a way of nudging the system.

NO.	PHASE	PURPOSE	GUIDELINES
1	**A** ANTICIPATE	Anticipation involves agreeing that which differentiates a sustainable as opposed to a less sustainable organisation. These distinctions are elicited as bi-polar dimensions (emergent constructs). Multiple constructs should be used to gain a robust anticipation, which can be used as a shared perceptual frame from which values-based coalitions can act.	- Identify emergent constructs that describe a sustainable organisation (see Annex 2). - Allow for dialogue between eco-tribes, supporting marginalised positions to allow expression of a wide range of viewpoints.
2	**D** DESIGN	In this phase rich connections between the shared anticipation and that which is personally meaningful to agents are established. Through this process agents develop a clear sense of why participation is meaningful and identify opportunities in which they can enhance sustainability by creating value for the organisation and containing system.	- Explore why the emergent constructs are personally meaningful to the agent (see Annex 2). - Assist agents and coalitions of agents to identify opportunities to make the organisation more sustainable.
3	**A** ACTIVATE	This phase involves 'activating' self-organisation by cultivating the conditions of emergent sustainability. The coach should remember that emergence isn't a force that can be operated but rather support agents to collectively create conducive conditions for emergent sustainability.	- Encourage agents to reflect on the extent to which the conditions are present. - Assist agents to explore ways of collaboratively creating conducive conditions.
4	**P** PRACTISE	In this phase agents and coalitions of agents are coached to support each of the four modes of emergent sustainability. Whilst the coach may be tempted to focus only on co-evolutionary self-organisation, it is important to simultaneously focus on the other modes to ensure that practice responds to the ongoing system dynamics. The coach should also support the embodiment of practice.	- Support reflection on the functioning of axiological coalitions, and encourage reflection on experiences. - Support agents create new habits and practices that enable sustainability to be embodied.
5	**T** TRACK	This phase involves tracking the implementation and result of practices to support sustainability. The coach should encourage ongoing epistemological contact. Care should be taken to ensure there is sufficient range in data that is collected and that links are made between different data sources, and that data analysis is used to inform practice.	- Assist the agents to identify a range of relevant metrics. - Support collaborative interpretation of data. - Explore implications of data analysis for enhancement of sustainability.

Table 4: ADAPT coaching process model

RECOMMENDATIONS

This study sought to contribute to the understanding of the emergence of corporate sustainability in organisations operating in the financial services sector in Southern Africa. The process of emergence was studied by means of a holistic business assessment using self-organising maps. This showed sustainability emerging alongside finance and diversity and indicated that more critical eco-tribes (devil's advocate and the resistance clusters) had a more differentiated view of the organisation and acknowledged progress towards sustainability. Emergent self-organisation in corporate sustainability has been discussed and conceptual models have been proposed which can be used to inform practice.

This section distills some of the outputs of the research, identifying recommendations for supporting emergent corporate sustainability. Since a coaching approach is of central importance in supporting emergent self-organisation, these recommendations can be considered design criteria for coaching. The following recommendations are proposed:

- **Focus coaching on emergence:** To enable emergent self-organisation, is important that the coaching agenda and process emerge from the dialogue and interaction between agents and interest groups (holistic) rather than setting coaching outcomes, as is traditionally done, from the perspective of the coachee or sponsor (the part).

- **Cultivate self-organisation towards sustainability:** Whilst compliance driven changes are important, the scale of the transition to a sustainable future mean that compliance-driven change is insufficient. This means that coaches need to cultivate a sense of meaningfulness around sustainability both within the organisation (axiological) and the employee (semiotic).

- **Foster coherence:** Whilst most organisations work towards creating alignment around strategy and values, this approach over-emphasises hierarchy and chain of command. Fostering coherence focuses on creating a mutual value add between stakeholders in a way that encourages self-organisation both within individuals but also amongst stakeholder groups.

- **Support epistemological contact:** Sustainability is complex with many facets, and can be difficult to perceive (e.g. carbon emissions, ozone depletion) and the effectiveness of sustainability actions challenging to monitor. Actions that may be the best sustainable choice today may not be tomorrow. The coaching process to include actively think through and collect relevant data. Epistemological contact is the experience of having access to relevant knowledge and feedback.

CONCLUSION

The transition to a more sustainable future is, simultaneously, a challenge to get back onto a co-evolutionary path and to shift our understanding of nature at the most fundamental level. Grasping and embodying a complexity paradigm are fundamental to this transition and offer the possibility of escaping the consequences of a long history of reductionist thinking which focuses on simplifying reality.

Corporate sustainability is a journey towards a fundamental redefinition of the way in which we as humans interact with each other and our containing system, towards an emergent co-evolutionary process. This requires a shift in both our interior mindsets and cultures and the exterior actions, practices and policies we use to structures our organisations. We must guard against basing our hopes exclusively on technical solutions without carefully reconstructing the worldview that has created so many of the problems that we now face.

Ultimately, sustainability and corporate sustainability at its core is a self-organised and co-evolutionary process and requires us to cultivate a sense of meaningfulness (semiotic intent) within an axiological frame that supports emergence. By reinforcing the co-evolutionary efforts of employees with feedback that allows for epistemological contact, we can together start charting a new course. The challenges ahead are immense, and we will need all hands on deck if we are to shift the trajectory of human history.

"The first thing that I have learnt is that you are never too small to make a difference" **Greta Thunberg**

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ANNEX 1: RESEARCH DESIGN

The purpose of the study was to better understand how organisations can address the challenges associated with sustainable development more effectively. Specifically, how corporate sustainability emerges in financial institutions, as opposed to sustainability initiatives being bolted onto the business. Exploring the role of coherence, a long-term temporal or spatial orderliness[21], facilitates a holistic understanding of the emergence of corporate sustainability.

If humanity is to achieve the Sustainable Development Goals set out in the United Nations 2030 Agenda for Sustainable Development[22], it is crucial that the private sector actively supports sustainability. Researchers have been calling for over two decades for a paradigm shift in which social and environmental domains are balanced with economic domains[23], yet there has been a dearth of empirical studies to enhance our understanding of how the shift in corporate sustainability takes place[24] – hence the importance of this study.

This exploratory case study used a mixed method explanatory sequential design[25]. Two financial institutions operating in Southern Africa that were actively addressing sustainability initiatives, were identified. A case study research strategy was used to explore corporate sustainability in its real-world context when boundaries between the phenomenon and context are unclear. Corporate sustainability is associated with a wide set of variables and open system boundaries[26].

The Cassandra Survey, a holistic organisational measure of sustainable performance[27], was used in the initial quantitative strand of the research. The holistic nature of the assessment is achieved through an integral Q approach[28], covering all four integral quadrants[29] as indicated in Figure 8.

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[21] Arecchi (2008)

[22] United Nations General Assembly (2015)

[23] Gladwin, Kennelly, & Krause, (1995), Hart, (1995), Shrivastava (1995)
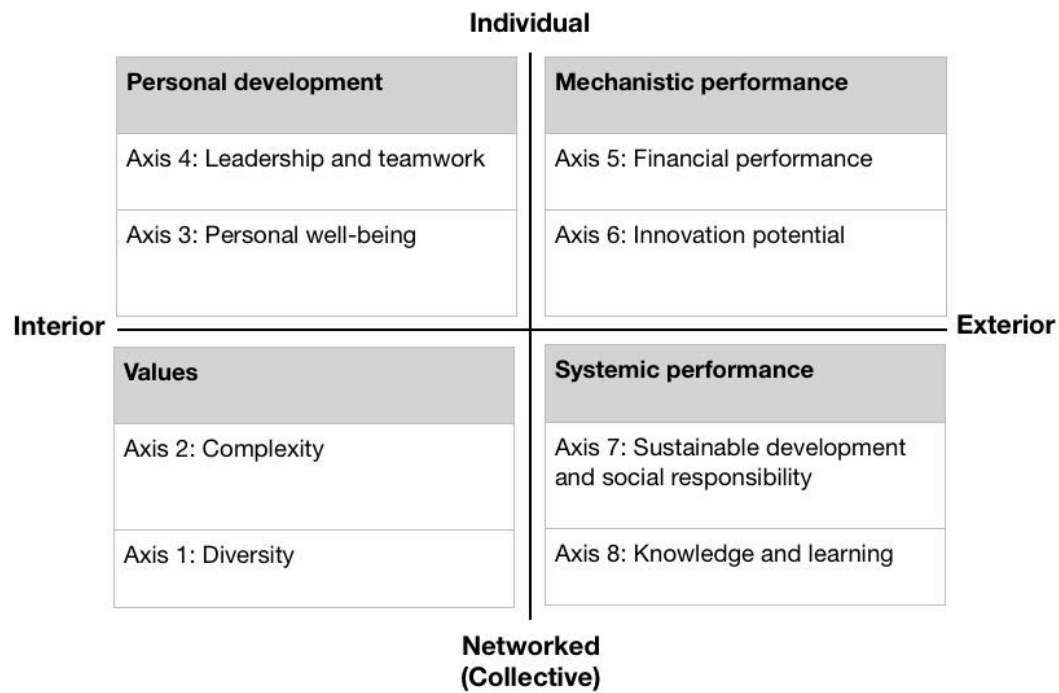
[24] Valente (2012)

[25] Creswell (2015)

[26] Chu, Strand, & Fjelland (2003), Yin (2014)

[27] Baets & Oldenboom (2013)

[28] Cacioppe & Edwards (2005)

[29] Wilber (2001)

Individual

Personal development	Mechanistic performance
Axis 4: Leadership and teamwork	Axis 5: Financial performance
Axis 3: Personal well-being	Axis 6: Innovation potential

Interior ———————————————————— **Exterior**

Values	Systemic performance
Axis 2: Complexity	Axis 7: Sustainable development and social responsibility
Axis 1: Diversity	Axis 8: Knowledge and learning

Networked (Collective)

Figure 9: Cassandra model[30]

The entire population of managers in each organisation were included in the sample. A sample size of 500 respondents was achieved in the quantitative phase of the research. Respondents came from Namibia, Botswana and Zambia. A response rate of 31.67% was achieved in Case A resulting in 434 respondents. The response rate was 57.12% in Case B, which resulted in 178 respondents. An artificial neural network analysis was conducted using self-organising maps to organise the data into clusters[31].

The subsequent qualitative strand used narrative interviews to explain the quantitative results[32]. A narrative approach to the qualitative data analysis prioritises the holistic and emergent properties of the data[33]. Purposive sampling was used to select information-rich cases in which informants were well informed about sustainability.[34] A total of 44 interviews were conducted, which comprised of 30 informants from Case A from the Namibia and Botswana operations, and 14 informants from Case B in Namibia. The data were transcribed and coded in Dedoose, a computer assisted qualitative data analysis software using narrative inquiry methods. The interview data allows for multiple stakeholders to interpret the clusters identified in the self-organising maps. The data were explored to develop a framework that explained the quantitative data.

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[30]Baets & Oldenboom (2013)

[31] Kohonen (1997)

[32] Creswell & Plano Clark (2010)

[33] Bakhtin (1986)

[34] Creswell & Plano Clark (2010) & Etikan (2016)

ANNEX 2: COACHING GUIDE

An emergent approach to sustainability requires that a coach is able to work with the anticipation process of agents individually and collectively within systems. The foundational organising principle of an emergent construct coaching approach is that emergence arises from the interaction between agents in a complex dynamical system who self-organise by anticipating events. A coach thus is interested in both the anticipations of agents that are used to organise the way in which agents engage in their experiences as well as the effects of the interaction between agents in co-creating the future.

Coaching in the context of the individual and collective anticipations of agents works with the co-construction of reality by people alongside the social, cultural, technological and physical contexts in which they inhabit. The climate crisis coupled with technological change and vast economic and political uncertainties has created a milieu in which knowledge and meaning is perpetually transitional, requiring coaches to support agents to individually and collectively reconstruct knowledge and systems of meaning-making where:

> "All knowledge operates through the selection of meaningful data and the rejection of data that are not meaningful. It does so by separating (distinguishing or disjoining) and unifying (associating, identifying), and organising into hierarchies (the primary, the secondary) and centralising (around a core of master notions). These operations, which use logic, are in reality driven by 'supra-logical' principles of organisation of thought, or paradigms: the hidden principles that govern our perception of things and of the world, without us being conscious of them"[35]

To coach effectively, an emergent construct coach elicits emergent constructs, that is, bi-polar dimensions which are used by agents to distinguish between preferred and less preferred elements of their experience. For example, respondents in this study differentiated between compliance-driven change and a holistic change with respect to sustainability. This can be explored as part of the semiotic intention of the agent, that is the system of meaning-making that explains why this is personally relevant to the agent. It can also be explored as part of the axiological frame, that is meaning-making that is applied within zones of coherence across networks of interacting agents in the system.

Emergent constructs are thus the distinctions that are used to anticipate the future. These constructions provide the bedrock of the coaching dialogue. and are applied across all four domains and three levels of emergent sustainability.

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[35] Morin (2008, p.2)

Identifying emergent constructs is best done through listening carefully to the narrative of agents and groups of agents. Listen for the themes that create distinctions between the desired future that is anticipated and that which is less preferred. As an agent or group of agents describe, for example, the importance of backing up sustainability messaging with substantial actions, ask for the contrast of this ("as opposed to?") to elicit the emergent construct. Restate the construct in the agent or group's language, for example, *substantive sustainability actions* as opposed to *greenwashing*. In this way, the coach can get clearer sight of the perspective of agents or groups that contribute to the self-organisation which is characteristic of the complex dynamical systems which they continuously co-create.

As emergence can't be acted on, it is useful to elicit emergent constructs from agents which describe distinctions which are meaningful to agents and applied in emergent self-organisation. Exploring and expanding zones of coherence where there is shared meaning helps to foster collaboration and innovation. Since these dimensions operate in hierarchies, the meaning-making can be explored at a more abstract level by asking the agent or group of agents: "why is this important to you?". This can be done repeatedly to determine how meaning is being organised for the agents (semiotic domain). This technique can also be applied to the axiological domain by asking why is this important for a group of agents? For the axiological mode, the coach should allow for dialogue in order to expand zones of coherence. This forms the basis for co-evolutionary self-organisation and epistemological extension.

Coaching across embedded, enacted and embodied levels enriches the coaching dialogue by linking various levels of system through the coaching process. In this way, self-organisation becomes more co-evolutionary. This helps to nudge the system by gradually shifting patterns of construing and acting. It is important that this is not a forced procedure but rather implemented in as part of the natural flow of the dialogue. To achieve this, the coach should move between levels in a contextually relevant manner.

Whilst this is a complex framework and demanding for a coach to implement, it can be practiced gradually. The aim is to grasp each level of emergent sustainability within each domain. A coach seeking to practice this may wish to get acquainted with the framework through the self-reflective application until the elements of the framework are internalised. Gradually it will become an intuitive part of the coach's mindset and coaching practice. It is important that the coach not overwhelm the coachee by trying to work through the entire framework but rather focus on elements that are relevant to the conversation at hand. Table 5 provides examples of questions to assist the coach to start using the framework. The questions in this table should not be considered as a blueprint nor as an exhaustive list of questions. The coach is encouraged to invent his or her own questions in order that practice is implemented in a contextually relevant manner.

DOMAIN	CONDITION	EMBODIMENT	EMBEDDING
AXIOLOGICAL	**AXIOLOGICAL FRAME** To what extent is there a clear and shared view of what is important to the organisation and our stakeholders?	**AXIOLOGICAL RESONANCE** To what extent do you resonate with the values? How do you feel about the way in which we add value to our stakeholders?	**AXIOLOGICAL SIGNFICATION** To what extent are your stakeholders engaged in your organisation's values and approach to business?
SEMIOTIC	**SEMIOTIC INTENTION** To what extent is contributing to sustainability personally meaningful to you?	**SEMIOTIC EMBODIMENT** To what extent is sustainability part how you approach your work and life?	**SEMIOTIC SYMBIOSIS** To what extent is your perspective on sustainability enriched by engagement with stakeholders and your environment?
CO-EVOLUTIONARY	**CO-EVOLUTIONARY SCOPE** To what extent do you have a clear mandate within which to address sustainability in your organisation?	**CO-EVOLUTIONARY PRACTICE** To what extent is sustainability part of your everyday practices and routines at work?	**CO-EVOLUTIONARY VALUE** To what extent does your organisation simultaneously create value the organisation, stakeholders and environment?
EPISTEMOLOGICAL	**EPISTEMOLOGICAL CONTACT** To what extent do you have relevant data which enables you to have sight of the impact of the organisation on stakeholders and environment?	**EPISTEMOLOGICAL NETWORK DENSITY** To what extent are you able to collate information related to different aspects of the organisation?	**EPISTEMOLOGICAL RANGE** To what extent is the range of data collected by the organisation sufficient to inform decision-making in the organisation?

Table 5: Sample questions per level