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Leadership for Sustainability: An Evolution of Leadership Ability

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Abstract This article examines the existing confusion over the multiple leadership styles related to successful implementation of corporate social responsibility/sustainability in organisations. The researchers find that the problem is the complex nature of sustainability itself. We posit that organisations are complex adaptive systems operating within wider complex adaptive systems, making the problem of interpreting just in what way an organisation is to be sustainable, an extraordinary demand on leaders. Hence, leadership for sustainability requires leaders of extraordinary abilities. These are leaders who can read and predict through complexity, think through complex problems, engage groups in dynamic adaptive organisational change and have the emotional intelligence to adaptively engage with their own emotions associated with complex problem solving. Leaders and leadership is a key interpreter of how sustainability of the organisation 'links' to the wider systems in which the organisation sits, and executing that link well requires unusual leaders and leadership systems.

Keywords Sustainability · Corporate social responsibility · Complexity

Corporate sustainability, or more commonly, corporate social responsibility (CSR) is a relatively new and growing area of interest for academics and practitioners, in terms of both theory and practice, and while much has been argued about the definition, it is still an ambiguous and complex umbrella term of contested meaning (Matten and Moon 2005). As such, it is often used synonymously with other terms such as corporate responsibility and corporate sustainability (Waddock and Bodwell 2007), as we use it in this article. The ambiguity of CSR makes it problematic as a practice, but it has gained popularity nonetheless as a broad concept (Crook 2005) commonly signifying the responsibility of the corporation to stakeholders representing the issues of 'people, planet, profit' (e.g. Cramer et al. 2006). The implementation of CSR as a practice is still a 'black box' in the literature (Linnenluecke et al. 2007), with the antecedents of CSR, such as the type of leadership behaviours that trigger or shape corporate responses in this domain (Basu and Palazzo 2008; Waldman et al. 2006) left largely unexplored.

Studies of CSR in organisations and industries have largely ignored the place of the corporate leader in implementing CSR initiatives (Waldman and Siegel 2008). However, limited more recent research on leader values, ethics and style in regard to CSR has attempted to address this question resulting in a wide variety of leadership styles having been associated directly or indirectly with CSR (e.g. Campbell 2006; Waldman and Siegel 2008; Angus-Leppan et al. 2010). Campbell (2006) argues that early CSR messages connecting business to community were communicated by 'far sighted' business leaders, who were not entirely altruistic. Waldman and Siegel (2008) point out that although there is a dearth of research in this area, the intellectual stimulation competency of transformational leaders was most associated with 'strategic CSR', strategic CSR being CSR that is conducted because it is of strategic benefit to the firm. Finally, Angus-Leppan et al. (2010) found that there were essentially two types of leadership

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and organisational systems in strategically CSR organisations, an autocratic-bureaucratic system and an authentic-consultative system. These last researchers also propose that transformational leaders would be a useful style to mediate between the two systems due to their debating style. These studies, and related research on ethical leadership, require further clarification (Waldman and Siegel 2008), however, as their disparate findings on leadership style alone indicate, there are foundational theoretical issues that must be addressed to improve CSR implementation and this may also assist in solving some age old leadership theory conflicts.

In this article, we examine the existing disagreement and confusion over leadership characteristics related to the successful implementation of corporate sustainability or CSR in organisations alongside the complex nature of the problem itself. We argue that the complex and dynamic nature of interpreting just how and in what way an organisation is to be sustainable means that leadership for sustainability requires leaders of extraordinary abilities. These are proposed to be leaders who can think through complex problems, engage groups in dynamic organisational change and have high emotional intelligence (EI) to deal with the personal emotions associated with complexity. In essence, we argue that leaders and leadership is a key interpreter of how the complexity of CSR 'links' the external environment to the organisation, and that this link is a powerful mediator for successful implementation of CSR. This is a type of leadership that is, arguably, yet to be seen or accepted in organisations around the world.

Sustainability is a Complex Problem

Corporate and human sustainability is widely recognised as a complex problem, in 2009 the National Academy of Sciences of the United States of America published a paper in its proceedings that demonstrated the level of complexity required to reach a sustainable human society. In this article, distinguished scientists Beddoe, Costanza, Farley, Garza, Kent, Kubiszewski, Martineza, McCowen, Murphy, Myers, Ogden, Stapleton, and Woodward conclude that:

> …the task is huge and will take a concerted and sustained effort if we hope to make the transition a relatively smooth one. It will require a whole systems approach at multiple scales in space and time. It will require integrated, systems-level redesign of our entire socio-ecological regime, focused explicitly and directly on the goal of sustainable quality of life rather than the proxy of unlimited material growth. It must acknowledge physical limits, the nature of complex systems, a realistic view of human behaviour and well-being, the critical role of natural and social capital, and the irreducible uncertainty surrounding these issues. (p. 2488)

As Beddoe et al. (2009) indicate, achieving sustainability is a complex problem for all agents in the system: organisations and people alike.

According to Metcalf and Benn (2012) in order to achieve sustainability, leaders of organisations must recognise that organisations operate in a wider complex adaptive system(s). This wider system(s) is the complex interconnected and dynamic environmental, economic and social systems within which businesses are embedded as agents. Metcalf and Benn (2012) argue that leaders have an interpretive role in the complex adaptive system, essentially leaders, and leadership, is likely to be the element of the organisation that 'makes or breaks' its adaptivity to the complex adaptive system(s) that surround and interact with it. These researchers also point out that effective whole Earth sustainability may be less about human moral decision making and more about complex problem solving, with most leaders either unable or discouraged to explore the full complexity of the organisation's role or impact within its wider systems environment.

Metcalf and Benn (2012) are not alone in their argument that sustainability as a complex problem of how organisation relate to their environment. Thompson and Cavaleri (2010) agree, indicating that organisational sustainability occurs within a complex system, successful navigation of which requires extensive trial and error learning and hence extensive build up of organisational knowledge. Further, McElroy (2006) proposed that achieving sustainability is contingent on unfettered knowledge of the human impact on the world and the capacity to learn from it. However, researchers are yet to draw out how this is then translated to the organisation itself, although Metcalf and Benn (2012) suggest that leaders and leadership may be the key, they do not indicate any particularly leadership type. This article explores what that leader type and related leader competencies may be.

The idea that organisations operate within a complex environment is also not new. Researchers investigating the resource based view (RBV) of the firm have long viewed organisations in terms of the way they work within their environment, this is due to the critical requirement of RBV, that is, that the relevant resources, whatever their type (i.e. resources, capabilities or dynamic capabilities), are specific to the firm and not capable of easy imitation by rivals (Barney 1986). In a review article, Lockett et al. (2009) summarise the empirical evidence existing for RBV and conclude that there are certainly methodological problems, however, the concept of organisational success through

interaction with its competitive environment is not one. These authors conclude that: the internal strengths of an organisation are important to successful strategy; history and experience of the competitive environment helps to shape the organisation itself; part of the process is the interpretation of resource functionality and use by managers; RBV is dynamic because resources availability changes over time; and finally that competitive advantage is usually internally developed. This theory is also highly adaptable as it is based on the 'facts' of how organisations operate, it is about function, and so does not require limiting assumptions, meaning that it can legitimately be combined with many other theories, a method that suits complex problems (Gray and Wood 1991).

In fact, organisational under performance in its environment has also been indicated to be the result of a lack of organisational knowledge and problem solving capacity. Cavaleri and Sievert (2005) surmise that errors in shared knowledge and theory within an organisation result in systemic issues and, hence, under performance of that organisation. However, as Thompson and Cavaleri (2010) point out, real life trial and error learning is costly for organisations, even when managers are encouraged to develop scenarios in their heads about the effects of their decisions they tended to be unreliable about estimating the dynamics (Forrester 1961). However, this is likely to be due to the context they are trying to scenario about, as it can be very difficult to be accurate about nonlinear dynamics through mental simulation alone.

Highly complex problems are also referred to as 'wicked' problems (Churchman 1967). These are problems that appear daunting because they have a large number of interacting elements and there is an absence of proven theoretical approaches for the solution (Learmonth et al. 2011). As Learmonth et al. (2011) state, sustainability and human interaction with the natural environment is a highly complex and therefore a wicked problem. These researchers indicate that agent-based computer modelling of systems may be the best way to generating those theoretical approaches towards solutions. They suggest this approach because it allows for difficult to predict, nonlinear outcomes, which are solutions that human beings may find too complex to generate by rational or logical thought alone. This argument further supports the notion that CSR and sustainability are complex problems.

Human Cognitive Processes of Complex Problem Solving

A complex problem is one that fulfils the following criteria: (1) aspects that are relevant to the solution process are large (complexity), highly interconnected (connectivity), and dynamically changing over time (dynamics); (2) neither structure nor dynamics are disclosed (intransparency); (3) the goal structure is not straight forward: in dealing with a complex problem, a person is confronted with a number of different goal facets to be weighted and coordinated (Dörner and Kreuzig 1983).

Complex problem solving has been analysed using controlled laboratory type experiments and 'Naturalistic Decision Making' (Klein 2008; Klein et al. 1993; Lipshitz et al. 2001; Zsambok and Klein 1997), rather than compete, these approaches complement each other in helping us understand how people solve complex problems. Whereas, naturalistic decision making exploration provides rich data on the process of problem solving, the uncontrolled nature of the situation means that we can never be entirely sure of conclusions (Funke 2010). Laboratory experiments offer high control but risk the possibility of creating unrealistic environments with equally questionable outcomes (Funke 2010).

Broadly, we can propose how human beings engage with complex problems as Fig. 1. Here, we demonstrate complex problem solving in a general model, developed by us, with recognition that it is necessarily a simplification. We propose this merely as a general heuristic for the purposes of thinking about the problem of complex problem solving. The diagram proposes that (1) We recognise a complex problem, (2) Engage cognitively, emotionally and motivationally, (3) Generate a mental model of what we are dealing with, (4) Theorise creatively, (5) Make some decisions, plans and predictions, (6) Decide on how to communicate the solution, (7) Communicate/act the solution and (8) Test the solution, then restart the thinking process, hopefully refining the solution over iterations.

As Funke (2010) concludes in his review of complex problem solving and complex cognition, complex cognition connects to emotion and motivation so inherently that neither affect nor motivation can be said to be mere by-products of complex cognition. In fact, at least three different approaches in the area demonstrate the importance of affect on problem solving cognition: (1) the 'affect as

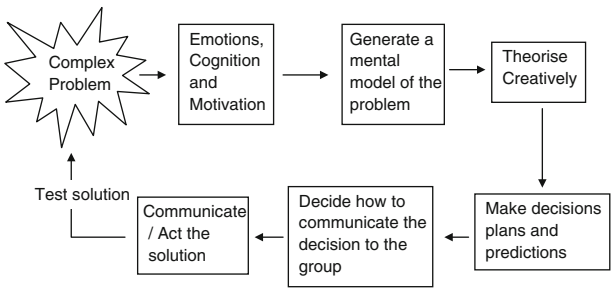

Fig. 1 Complex problem solving heuristic

information' approach by Schwarz (1990), (2) the 'assimilation–accommodation' approach by Fiedler (2001) and (3) the 'affect-infusion' model by Forgas (2001). In essence, the more complex a problem becomes, the more important it is to consider how emotions and motivation interplay to the person's thinking about a solution.

This acknowledgement of how feelings and motivation effects complex problem solving has also been recognised by researcher interested in 'sensemaking'. As defined by Weick et al. (2005) sensemaking is '…the ongoing, retrospective development of plausible images that rationalize what people are doing' (p. 49), essentially the process we use to make sense of what we do in the world through retrospection.

Thompson and Cavaleri (2010) indicate that when analytical, logical approaches to a problem are not possible, managers tend to rely on their own sensemaking, which they also found to be driven by their personal needs. This bias to the self is also reflected in the leader–follower model proposed by Keller (2003) where follower sensemaking of what makes a 'leader' is shown to be influenced by childhood attachment styles of the follower. In addition, a relatively common, but complex, executive decision making experiment by Westaby et al. (2010) found that leader decision making and sensemaking around reasons for decisions involved not only logical/rational decision making but also attitudinal, normative and control perceptions. These results echo those found by dissonance researchers, indicating that leaders who experience a discontinuity between their reasons and their choices will be motivated to seek out further reasoning to reduce the negative sensation of dissonance (De Dreu and Van Kleef 2004; Jonas et al. 2005; Jonas et al. 2001), even after the decision is made, indicating that the way we solve complex problems is not limited by logical/rational decision making.

In summary, the way human beings tend to solve complex problems is complex in and of itself. Funke's (2010) term of 'complex cognition' seems most appropriate since, as he recognises, complex problem solving involves more than just cognitive processes, it includes emotion and motivation, aspects that are not found in simple problem solving. Emotions and the motivation to persevere in complex, nonlinear and even chaotic environments, alongside the recognition that our own sensemaking is inherently self-biased, are equally important as the ability to create a logical argument that followers and leaders can use for their own sensemaking.

The complexity of complex problem solving as complex cognition becomes even more compounded when one considers the multifaceted nature of leadership itself. In summary of what we have discussed above, in asking the question of how CSR leadership creates sustainability in organisations we are essentially layering complex problems over each other. Sustainability, as we have shown, is a complex problem, how human beings solve complex problems is a complex problem (complex cognition as suggested by Funke 2010), and leadership is also hotly contested in the literature, indicating that it too is a complex problem. Hence, the question of 'how CSR leadership creates sustainability' is a multilayered complex problem in and of itself.

What is Leadership?

Leaders are not necessarily managers, although the study of leadership is dominated by a dyadic relationship between formally designated leaders (or managers) and their subordinates. The much-studied field of leadership is plagued with a plethora of contested definitions (Jackson 2005), however, here we take Yukl's (2001) unifying premise that the only consistent definition of leadership is that of a process of influence.

When defined as a process of influence, leadership is broader than management. Influence can come from stakeholders inside and outside the firm (e.g. Frooman 1999) and may be a system of behaviour, i.e. group behaviour, rather than the behaviour of an individual.

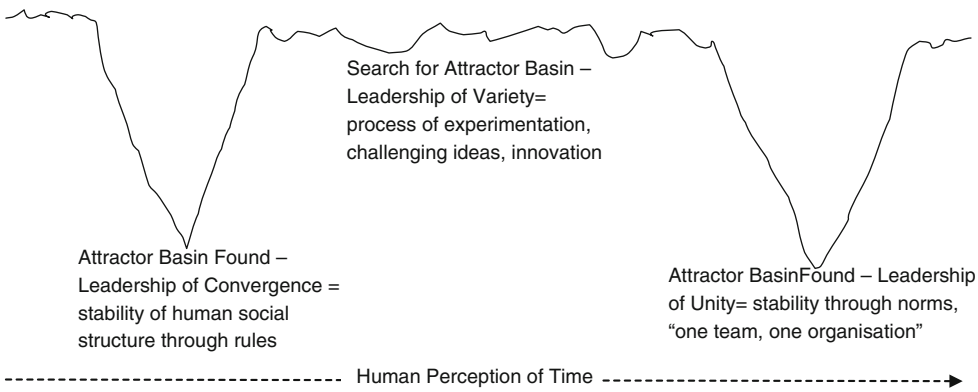

Fig. 2 Complex systems leadership theory

Hence, leadership moves from the concept of leadership as a relationship to the concept of leadership as a social process that contains complex relationships (Barker 2001). For example, Gemmil and Oakley (1992) define leadership as 'a social process… of dynamic collaboration, where individuals and organisation members authorize themselves and others to interact in ways that experiment with new forms of intellectual and social meaning' (p. 124). In discussing leadership in more detail, it is important to do so in the context of CSR. As leadership styles are often context specific, we next explore current understandings of leadership as it applies to CSR, noting Waldman's point (in the letter exchange between Waldman and Siegel 2008) that there is very little mention of the role of leadership in the academic CSR literature.

Leadership Styles Linked to CSR

As leading scholars, Waldman and Siegel (2008) agree in their letter exchange, empirical studies of CSR have largely ignored the place of the corporate leader in implementing CSR initiatives. Although top managers are obviously in the best position to influence these types of strategies and projects, researchers have previously failed to examine the effect of leader values, ethics and style in regards to CSR (Waldman and Siegel 2008). The letter exchange reveals Waldman's preference for strategic CSR, defined as '…dimensions of CSR that are likely to be matrixed in the business and corporate strategies of firms…' (p. 118), which we believe translates to a version of Matten and Moon's (2008) explicit CSR.

In their 2008 letter exchange Waldman resists the usefulness of purely 'values-driven' CSR, or CSR driven by the manager's personal values, as he argues that managers are not accountable to society, but to the firm's shareholders and furthermore he argues managers have no way of knowing the true needs of stakeholders. Waldman's argument implies that the most appropriate leadership style for organisations implementing CSR strategies is that which is strategically driven and which does not require maintaining an integrity to personal values. Siegel, on the other hand, argues that leader integrity to personal morality can yield positive outcomes for businesses and may actually be the driver of CSR strategies in organisations (Waldman and Siegel 2008). Although valuable, neither of these viewpoints take into account complexity theory and therefore they are predominantly focused on an introspective form of CSR leadership, either internal to the leader or internal to the organisation and shareholders.

Waldman (in the letter exchange of Waldman and Siegel 2008) does not link his strategically driven CSR leadership to any empirically researched leadership style. However, Siegel's reference to the personal values of a CSR leader is at least indicative of authentic, ethical and moral leadership styles. Therefore, it is reasonable to suggest that our understanding of CSR can be usefully informed by the literature on authentic, ethical and moral leadership models. We note that Siegel (in the letter exchange of Waldman and Siegel 2008) indicates that moral leadership may actually be a driver of CSR which may also be of strategic benefit to organisations. De Hoogh and Den Hartog (2008) found that leaders who demonstrated a sense of right versus wrong, duty, concern for others, concern for consequences and also had a tendency to judge their own behaviour, were seen as ethical leaders. In particular, a sense of duty was found to link most strongly with the perception of ethical leadership. This type of leadership was most prominent in non-profit organisations. In addition, leaders who value the breadth of their organisation's stakeholders appear to be more successful in their leadership positions, according to the financial and social success achieved by their organisation (De Hoogh and Den Hartog 2008).

In Sully de Luque et al. (2006) researchers examined the values of 500 CEOs in 17 countries, asking what factor or values were most important in their decision making. The results indicated that leaders with strong economic values were viewed as authoritarian and failed to be visionary, however, leaders with strong stakeholder values were viewed as visionary and not authoritarian. Finally, this study also found that visionary leaders with strong stakeholder values were in the most financially successful companies. Ethical leadership has been positively linked to other elements of organisational effectiveness (Brown et al. 2005; De Hoogh and Den Hartog 2008; Khuntia and Suar 2004), De Hoogh and Den Hartog (2008) found that 'morality & fairness' and role clarification were both positively correlated with optimism about the future and perceived top level management effectiveness. However, as Waldman and Siegel (2008) agree in their letter exchange, more cross-level research is needed to clarify links between leadership behaviours and styles and CSR.

Walumbwa et al. (2008) also found that authentic leadership, where leader behaviour keeps its integrity with the leaders' personal values, had strong correlations with specific job outcomes. These researchers used their own questionnaire measure of authenticity and defined this leadership style as:

> …a pattern of leader behaviour that draws upon and promotes both positive psychological capacities and a positive ethical climate, to foster greater self-awareness, an internalized moral perspective, balanced processing of information, and relational transparency on the part of leaders working with followers, fostering positive self-development. (p. 94)

They surveyed 478 students with a mean age of 32 years and found authentic leadership to correlate positively with job performance. These researchers also found smaller, but still significant, positive correlations with job satisfaction and organisational climate. This finding of the value of leader integrity was also found in Thomas et al. (2004) where leadership integrity was associated with several positive business outcomes including reduced business costs.

Finally, although transformational leaders are not necessarily described as ethical or socially responsible, the theory on this form of leadership does require that such leaders are trusted (Boerner et al. 2007) which indicates a potential link to integrity through congruous behaviours. Transformational leadership has long been linked to organisational performance through individual studies and meta-analyses (DeGroot et al. 2000). In particular, transformational leadership has a strong link to innovation (Shin and Zhou 2003) which Boerner et al. (2007) argue is largely due to the mediating factor of debate that this leadership style encourages, thereby creating an environment where debate is used to make sense of novel ideas and new areas.

As discussed, authentic leadership, ethical leadership and transformational leadership have each been indirectly or directly linked to corporate sustainability and CSR. These three leadership styles show a degree of conceptual overlap although the literature also describes some distinct differences between them. Ethical leaders display behaviours that indicate they seek to do the right thing (Trevino et al. 2000), they are consistent in their pursuit of their ethical standards and they do not compromise when others pressure them (Brown et al. 2005). Ethical leadership and authentic leadership share an emphasis on honesty, openness and integrity as well as a desire to do what is right. However, ethical leaders have been found to use punishment to hold people accountable for ethical conduct (Brown and Trevino 2006), something which is not mentioned for authentic or transformational leadership. Transformational leaders are charismatic, they inspire, stimulate intellectually, consider the individual and influence through idealised visions. However, there is no indication that transformational leaders are aware of their own motivations and values, something which is true for authentic leaders (Walumbwa et al. 2008). Walumbwa et al. (2008) also argue that transformational leaders aim to develop followers into leaders, whereas authentic leaders aim to develop followers towards personal authenticity, not necessarily a leadership role.

Adding to this confusion of leadership links to CSR is another, strongly contrasting style: autocratic leadership. This was perhaps the first leadership style to be linked to CSR. Thomas Hobbes, in his book Leviathan (1651, 1985), argued this form of influence to be the only way to control selfishness in the commercial world. This style is characterised by coercion and a distinct lack of democratic process in decision making (Van Vugt et al. 2004). Although autocratic leadership has been largely ignored in the research literature for the past decade, researchers studying the topic in the second half of the twentieth century found support for Hobbes's argument, showing that a controlling leader can effectively resolve and prevent social dilemmas (Arrow 1951; Hardin 1968; Messick and Brewer 1983; Ziller 1965). Interestingly, group members have been found to be very willing to give up their freedom of decision making to their leader to solve a social dilemma (Foddy and Crettendon 1994; Messick and Brewer 1983; Rutte and Wilke 1984; Samuelson and Messick 1986a, b; Wilke 1991). However, this style has also been found to be the least popular choice among groups seeking a leader to improve their social performance (Van Vugt and De Cremer 1999). In a later study, Van Vugt et al. (2004) also found that autocratic leaders are less likely to have stable numbers of staff in voluntary group situations as people feel less loyalty to the group, thus impacting staff engagement at work and hindering the development of a positive internal CSR culture.

Leadership in Complex Environments

Crossan et al. (2008) focus on describing a framework for effective strategic leadership in dynamic environments. Hypercompetitive and increasingly complex environments have given rise to a need to deal with extensive amounts of information where continuity of existing business operations may not be assumed (Foster and Kaplan 2001), thereby increasing demands on the skills of leaders. Researchers have proposed that the new key responsibility of leadership is sensemaking of the external environment as leaders must help the organisation stay aware of and adapt to the rapid changes in its industry and new stakeholder demands (Crossan and Hulland 2002; Vera and Crossan 2004). Given this level of complexity, it seems unlikely that a single leader will have sufficient information to develop correct decisions for the organisation. Some scholars suggest 'shared leadership' as the preferred model, arguing that leaders encouraging leadership behaviour throughout the organisation will be more effective in this type of environment (Ireland and Hill 2005; Pearce and Conger 2003), this also supports the idea that leadership systems of behaviour, i.e. group behaviour, may take this role.

If, as suggested, we take CSR to be both ambiguous and complex, then this research indicates that group or shared leadership and a sensemaking approach may be the most appropriate for organisations struggling with a demand for increasing social and environmental responsibility in their industry environment. If this is the case then organisations struggling with CSR implementation may force the surfacing of unofficial/emergent leaders. These are individuals who emerge as leaders from a group of peers. Emergent leaders are not formally appointed so they exert influence through the willing support of other group members (De Souza and Klein 1995). They become leaders by exhibiting behaviour that others perceive as leader-like (Lord and Maher 1991). In particular, researchers have found emergent leaders to show intelligence, masculinity, dominance (Lord et al. 1986) and self-monitoring (Kickul and Neuman 2000). Stewart (2002) also found emergent leaders were more likely to be extroverted and open. Interestingly, although emergent leadership is touted as a substitute for traditional hierarchical leadership (Rubin et al. 2002), there is not yet any empirical data relating emergent leadership with ethical behaviour or CSR.

However, the very complexity of CSR in organisations means that another potential style of leadership may be that of complexity leadership. As Uhl-Bien et al. (2007) explain, complexity leaders enable the future rather than direct it, they use language to create shared meaning from conflict that they themselves surface, creating conditions for people to innovate as individuals and learn as a social group. The business benefits of complexity leadership are yet to be demonstrated empirically, however, the case study of the 'Mission Church' (Plowman et al. 2007) plays out some aspects of this form of leadership. This unique study of a church undergoing radical change, involving an alteration of attendees from the middle class to the homeless resulted in a need for leaders to bring about rapid organisational change.

Plowman et al. (2007) found that leaders refrained from dictating direction and instead took on a role of disrupting existing patterns, surfacing conflict, embracing uncertainty, using simple rules and enabling sensemaking to encourage a new direction. In essence, the leaders of the church deliberately provoked discussion of conflicting ideas, reformation of habits and the embrace of uncertainty to ensure that the issues the church was facing were not ignored, and that the group developed its own solution. The result was a reinvigorated church with local recognition for its ministry of the homeless. It must be noted that complexity leadership is not 'emergent leadership', although these two may seem similar. Complexity leadership is a process of leadership performed by leaders and others in the organisation, emergent leadership is an event of a single person 'emerging' as a leader from a group of peers. In our view, further empirical work is needed to support the evidence from this single case study concerning this leadership style. However, drawing on the example of the Mission Church, it does seem reasonable to predict that CSR implementation in organisations may encourage this type of leadership approach due to the potential for ambiguity and complexity associated with conflicting stakeholder demands.

Complex Systems Leadership Theory

In fact, the style of leadership described by Uhl-Bien et al. (2007) and Plowman et al. (2007) reflects the dynamic nonlinear conceptualisation of organisations as complex and/or complex adaptive systems as described by Metcalf and Benn (2012) and hence the place of leadership in complex systems. In this theory, human systems self-organise to be complex systems, and if they also adapt to their environment they are termed complex adaptive systems (Holland 1995), hence leadership in this theory is an emergent phenomena of distributed intelligence (Hazy 2006), it is a group behaviour pattern. We note that, again, this is similar to but not the same as the term 'emergent leadership' in the leadership literature, where as 'emergent leadership' in the literature refers to a single person who 'emerges' from a group to be a leader, leadership as an emergent phenomena is not limited to a single person, it is group behaviour which may or may not anoint a single person to be called 'leader'. In systems language, this distributed intelligence form of leadership is described using systems language to be either: leadership of convergence, leadership of variety, or leadership of unity (Hazy 2006).

Systems theory describes organisations as nonlinear dynamic systems that tend to exhibit self-organising and emergent phenomena (Holland 1995; McKelvey 2001, 2003; Prigogine and Stengers 1984; Stacey 1996; Thietart and Forgues 1995). Hence, any 'stable' emergent structure of these nonlinear dynamic human systems is thought of as having a basin of attraction, meaning that the system, upon being affected by its environment, will return to its' original state. Like water in a bowl, it is nudged and then has ripples across the surface, but the water stays within the bowl and eventually settles back down. Leadership that encourages this stable state, or encourages convergence around the basin of attraction is called Leadership of Convergence (Hazy 2006).

If the complex demands of the environment surrounding the human system increase, the attractor basin becomes shallow and any nudge from the environment means that the water runs the risk of jumping the lip of the bowl, nor will it settle back to its previous structure (Levinthal 1997). This could result in the disintegration of the human system (organisation), or, if another attractor basin is possible and explored, it could mean that the human system takes on

another attractor basin, another structure, and converges again. We have endeavoured to describe complex systems leadership theory in Fig. 2 using a kind of organisation 'timeline' to demonstrate when an organisation finds an attractor basin and when it is searching for one.

This conceptualisation is neatly supported by the Mission Church (Plowman et al. 2007) case study, where leaders in the church provoked the exploration of alternative attractor basin/church forms. It seems likely that they sensed their church's attractor basin had become shallow and needed to find new possibilities. If understood in this way, complexity leadership then becomes a way of possibly speeding up this search for another attractor basin. This kind of exploration of new structural forms of the human system is called: Leadership of Variety and is observed as a process of exploration and experimentation (Hazy 2006).

Hazy (2006) argues that the combination of individual, intra-organisation leadership activity (which might be as simple as effective team work of subordinates or largely subconscious agreed to social values of a team) combined with the activity of 'higher level' official leaders, actually creates the emergent 'leadership', and that, in effect, we often misattribute official leaders with charisma and high intelligence when these two forms of 'leadership', the single 'titled' leader and the group behaviour type of leadership, work together to create the style of 'leader' that we attribute organisational success to. Hazy (2006) uses the obvious power of a raging river as a metaphor for this effect of misattributing organisational success to a single leader, asserting that it is the human system as a whole that is performing well, not merely those at the top and it may be that those at the top are just an expression of the group leadership behaviour.

Leadership Style Theory and Complex Systems Leadership

In fact most leadership styles discussed in the literature can be subcategorised in terms of their aligned effect on the human complex system of the organisation and this is what we will attempt to do here for the main leadership theories. Broadly speaking, leadership theories fit into five higher order categorisations: trait theories, behavioural theories, situational theories, skill-based theories and visionary theories. These theories have developed in the literature alongside wider social thinking about leadership, moving from the idea of the 'great man', to a single or multiple leadership personality/behaviour type or combination of types, and then to what is required to transform or mobilise groups.

Trait theories were first postulated in the 1940s and are the common way of describing well-known leaders through their characteristics, or personality. For example, early researchers (Stogdill 1948; Yukl 2001; Dobbins et al. 1990; Bennis 1984) found that leaders differ from non-leaders on: intelligence, honesty and integrity, self-confidence, ambition and high energy, task-relevant knowledge, the desire to lead, self-monitoring and charisma. However, Stogdill's seminal challenge of trait theories also found that traits only predict approximately 10 % of leadership success (Stogdill 1948). One of the proposed reasons for this low predictability was the problem of what followers actually saw from leaders. Personality is a psychological construct and may not be displayed consistently to followers, hence the next step was to look at behavioural styles.

Behavioural theories describe the actual behaviours leaders use, and hence how leaders interact with others, including followers. The first of these was the innovative Managerial Grid, created by Blake and Mouton (1964) which broadly categorised leader behaviour as 'concern for people' and 'concern for production', the juxtaposition of each producing nine potential leadership styles. Ekvall and Arvonen (1991) then added development-oriented behaviour to update the theory for what they saw were more dynamic times. In general, behavioural styles theories have been more successful in predicting leadership success, however, although they take into account the perceptions of followers, they do not consider the different environments leaders must lead within. Situational leadership theories endeavour to fill that gap.

Situational theories have tried to determine the critical situational factors that affect leadership success. Fiedler (2001) developed the first contingency model of leadership, referring to: leader–member relations, task structure and position power, as the key factors involved. Basically, how these factors interact determine what a leader should do and thus how successful they can be. This was then advanced and popularised by Hersey and Blanchard (1974, 1982) who extended the theory into four prescriptive leadership styles and four stages of development. Path-Goal theory is another form of situation leadership theory based on situation modelling and decision-making structures (Keller 2003). Situational leadership theory has strong intuitive appeal and is widely accepted, although its underlying assumptions have been challenged (Hambleton and Gumpert 1982) due to the concern that the wide variety of potential situations could mean that the concept itself is less than useful.

Transformational leadership theories endeavour to move past previous theories through the recognition of the power of inspiration. These types of leaders are often seen as 'heroic' and are proposed to have a profound effect on followers (Burns 1978), at least in the short term. They are charismatic, they excite, arouse and inspire followers and

encourage debate (Bass and Avolio 1990). Transformational leaders are seen to achieve something on top of what transactional leadership can achieve. There is much support for the effectiveness of transformational leaders, even across some cultures, however, transformational leadership has been found to be best used in short bursts as 'heroic' leaders are often seen as threats to others and are often cut down in political manoeuvres (Bass and Avolio 1990).

Transformational leadership, like all the previous theories, also suffers from an assumption that leaders must treat all subordinates the same way. LMX theory (leader–member exchange theory) indicates that leaders not only treat all subordinates differently, they do so in relation to the amount of 'trust' they have for their subordinates (Graen and Uhl-Bien 1995). Further, the manipulation of this differentiation is very powerful in contributing to leader success (Graen and Uhl-Bien 1995).

All of these popular leadership theories, along with those discussed previously in relation to CSR/sustainability, can be shown to link conceptually to complex systems leadership theory, juxtaposed against the complex systems leadership concepts. In Fig. 3, we layer these theories over the complex systems leadership theory diagram created for Fig. 2, this is our interpretation of how leadership styles relate to complex systems leadership theory and, as such, we are open to other interpretations, however, given the previous review these diagram locations seem most logical.

This diagram suggests that Leadership of Convergence, rule or stability based leadership, is seen in forms Autocratic, Bureaucratic, Ethical and Moral styles of leadership. Search for Attractor Basin or Leadership of Variety is seen in Transformational, Complexity and Emergent styles, where exploration or search for new ideas is prominent. Leadership of Unity, where norms or organisational culture is aligned, is seen in Collaborative, Participative, Shared, Authentic and Visionary/Stakeholder styles of leadership, basically any style that involves shared connection or collaboration either on human personal values, organisational culture values or through discussion-based agreement. This diagram helps to align multiple leadership theories alongside the current researchers' exploration of the organisation as a complex adaptive system, it demonstrates the theory that the appropriate leadership 'style' is dependent on the adaptive state of the organisation, or group, i.e. it demonstrates the importance of whether the social group is converging, searching or stabilising and hence what leadership 'styles', and hence which individual leaders, are promoted, emerge or are surfaced by the group.

Complex Systems Theory and Sustainability

As discussed previously, if we accept the idea that organisations operate within what Metcalf and Benn (2012) call a broad set of complex interactive and dynamic environment, economic and social systems, the CIDEESS, it's then logical to also look at the organisation itself as a complex adaptive system or as complex adaptive processes as Stacey (2000) proposes, thereby resulting in a layered complex view of organisation management and leadership for sustainability. This interaction of systems/processes then returns us to the RBV of the firm, where organisations are best adapted to their environment through their interaction with the market. RBV allows us to view organisations as complex and assists in framing our assertion that organisations need to adapt to a complex environment, while also providing some guidance on how to discover and interpret that adaptation.

As previously indicated, RBV suggests that there are heterogeneous or firm-level differences that allow some organisations to sustain competitive advantage in the marketplace (Barney 1986; Noda and Collis 2001; Wernerfelt 1984). These differences can be relationships or resources (Barney 1986; Collis 1991; Black and Boal 1994; Miller and Shamsie 1996). Miller (2003) in a study of two dozen firms found evidence for the RBV, however, not in

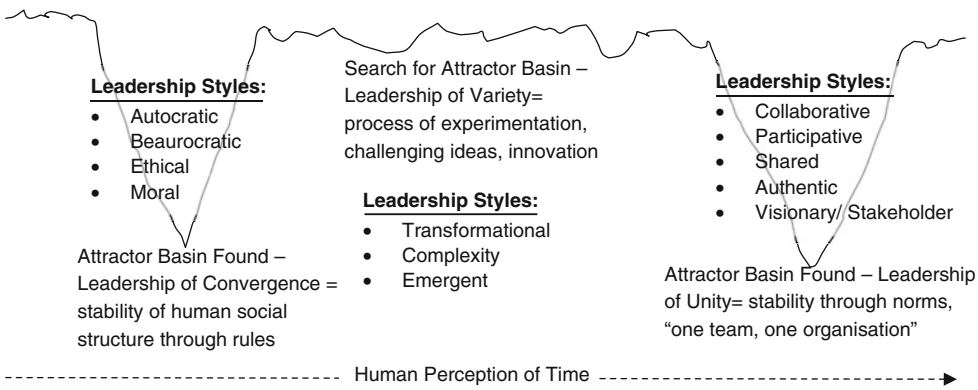

Fig. 3 Complex systems leadership theory overlayed with main leadership theories

relation to use of resources or relationships. Instead Miller (2003) found that firms that discovered their individual quirks—sometimes liabilities—and were then able to embed these in organisational design and leverage across appropriate market opportunities, where able to build a financially sustainable advantage in the marketplace. Of course sustainable in Miller's (2003) sense meant a consistent competitive advantage rather than a consistently socially responsible sustainability.

Suggesting the system theory concept of Leadership of Variety, the development of asymmetries in the RBV theory was, according to Miller (2003), dependent on the organisation's willingness to detect the asymmetry through experimentation, systematic organisational introspection, problemistic search and boot strapping on nascent capabilities. Detection was also not a causal process as it was hampered by causal ambiguity, superstitious learning, system embeddedness and remoteness from positive outcomes (Miller 2003). In other words, how these organisations detected the organisational facets that became competitive advantages was not a logical or rational process related to immediate cause and effect.

Reflective of systems theory's concept of an organisation moving from one basin of attraction to another, Miller (2003) discovered that once the quirks have been found, organisations had to make the asymmetries a high priority, fund them and turn them into valuable capabilities, often through organisational re-design which might sometimes be quite large scale.

Complex systems theory combined with the RBV of the firm, uses the term 'sustainability' to primarily refer to long-term financial viability, however, it also mentions the organisation as using 'environment' inputted into the human system as a limited resource (Hazy 2006). If we take the view that sustainability commonly signifies the responsibility of the corporation to stakeholders representing the issues of 'people, planet, profit' (e.g. Cramer et al. 2006), then this seems too limited for our purposes.

In order to expand the theory towards a broader view of sustainability, we return to the notion that organisations operate within many broad complex adaptive systems and must use 'leadership' to be adaptive to the demands of those systems (Metcalf and Benn 2012). The 'Environment' system inputs to the organisation then, must be expanded to include not just environmental issues, but also social system issues and international economic issues, and these are not just 'inputs' into the system, but must be highly integrated into the organisation through an increasingly porous membrane between those within the complex human system of the organisation and the surrounding complex adaptive systems, as suggested by Metcalf and Benn (2012). Leadership then is the ability to create and work well with this membrane, ensuring an adaptive and successful 'link' between the internal system and the wider one.

Leadership Effectiveness in Complex Systems Theory

The nature of complexity and organisational effectiveness then begs the question as to how to measure and therefore prove or disprove the theory explored above in this article, and to explore this notion we turn to ideas of existing complex systems leadership theorists, which are yet to be linked to the 'people, planet, profit' (e.g. Cramer et al. 2006) notion of sustainability.

Hazy (2006) argues that leadership effectiveness in complex systems is best measured through emergent system properties, rather than the more traditional measurement of individual behaviours. Hazy (2006) suggests such measures as 'Rate of Resource Flow' and 'Efficiency of Resource Use' in the human system, or even high level financial outcomes such as cashflow and margins for measuring leadership effectiveness. However, Hazy (2006) also indicates that leading is the 'genesis' of social structure and alludes to social structure as organisational culture. This seems to indicate that some 'measurement' of organisational culture would also be a way of accessing the effectiveness or perhaps appropriateness of leaders and leader style.

In effect, all these system level measures inevitably attempt to look at how the organisation 'links' to its external environment, however, the focus is primarily through market and financial measures, due to its strong link with the RBV of the firm. This is limiting to researchers interested in measuring leadership in relation to sustainability where sustainability is more than organisation financial sustainability.

Sustainability researchers who are interested in sustainability as 'people, planet, profit' (e.g. Cramer et al. 2006), would argue for additional measures that can balance human 'sensemaking' of the external complex adaptive system with financial viability of the firm. It may also be that measurement of individual leader behaviour, as per organisational hierarchy, may still be worthwhile if it is used in conjunction with system level measures. As Gleick (1989) suggested in his popular book 'Chaos', order can sometimes be found in the seeming chaos of natural forms at system level, it merely depends on the level of the system one is observing. In that sense, it is worthwhile to model systems at all levels, including the individual level in order to measure them usefully.

Further, system level measurements could include some existing measures, such as organisational culture. It may be that individual leader behaviour is a trigger for system wide differences in the organisation, or this may be an expression of organisational culture when leaders are effective.

The GLOBE research project, along with a substantial amount of empirical studies, has found that what is expected of leaders, i.e. what leaders may and may not do, and the status and influence bestowed on leaders vary considerably as a result of the cultural forces around them (House et al. 2004). As Jackson and Parry (2008) point out, leadership studies largely ignore the place of organisational culture, however, it was Schein (1985) who recognised the importance of the original leader in shaping organisational culture, and Smircich and Morgan (1982) who saw leadership as a manifestation of organisational culture. Alvesson (2011) in his review of the relevant literature concludes that leadership is most likely to be an outcome of culture, rather than the other way around. Regardless, leadership and organisation culture are so closely related that it is worthwhile measuring them as higher and lower expressions of the organisation's complex adaptive system and therefore a way of measuring the system usefully.

In addition, as some researchers have found, there may be leaders who can work better with chaos and may therefore be more attuned to leading organisations in chaos like situations. Heath (2002), Metcalf (2001) and Herbert (1999) all found evidence for human cognitive sensitivity to chaos and the ability to predict within it. Herbert (1999) found that there was a pattern to the way some people responded to chaos like environments and Metcalf (2001) found that this ability was correlated to 'fluid' intelligence. These results indicate that some people are more highly adaptable to nonlinear or chaotic environments, i.e. natural dynamic environments. Given that sustainability as 'People, Planet, Profit' requires adapting one complex system to the needs of many other systems surrounding the organisation, this may be a specific human ability to encourage and evolve in order for human society (and human systems) to reach sustainability.

Leadership Evolving Sustainability: An Evolution of Human Ability

Since sustainability as 'People, Planet, Profit' is necessary for human survival without large scale adaptation to a dramatically climate altered planet Earth, it seems logical that organisations that can get ahead of this problem and adapt will have more highly evolved human systems and/or more highly evolved 'links' between the human system (the organisation) and its external systems. They may also have more highly evolved leaders who are better navigators of complex environments. In this section, we attempt to summarise the characteristics this kind of system 'leadership' and individual leadership behaviour might demonstrate.

At an emergent, whole of system level, Hazy (2006) argues that financially sustainable complex adaptive systems exhibit behaviours such as appropriate levels of resources in the system, a small amount of slack, an ability to make the most of resources, exploratory leadership and sufficiently porous boundaries so that it is well connected with the market (see columns 1 and 2 in Table 1, table adapted from Hazy 2006). We propose that these can be labelled as: system resource flow, system strength, system capacity, system growth and system sustainability, where sustainability is purely in relation to market. Hazy (2006) also proposes the system level measures that would be appropriate for these behaviours.

In Table 1, we take Hazy's (2006) theory and add further system level components in an effort to both improve measurement of these outcomes and include social and environmental factors in terms of sustainability. If we acknowledge that sometimes what appears chaotic can be predictable at lower or higher levels of the system (Gleick 1989), it seems logical to include additional levels in Hazy's (2006) work, in this case we include employees and leaders as internal organisation agent levels, along with external stakeholders at higher (wider) system levels.

The purpose of the current researchers' expanding Hazy's (2006) theory is to determine how in fact we might one day both measure and determine just how sustainable an organisation truly is. To do this accurately, we must expand the system under discussion to include the wider CIDESS (Metcalf and Benn 2012) the organisation sits within, here we propose that this should be through stakeholders. We also indicate that it could be in the amount of decision-making power that stakeholders have (more power if they are on the board of the organisation for example) and how stakeholder interests are accepted into the organisation (through amount of staff diversity for example). In essence, in agreement with Metcalf and Benn (2012), we propose measures that can indicate how 'porous' an organisation is to its external CIDESS, particularly environmental and social systems.

The additional complexity of maintaining a strong 'porous' link between the organisation and its external context: market, environment and society means that leaders who are able to help an organisation adapt to and recognise the demands of a wider highly complex set of systems (the CIDEESS) will likely think differently than any other form of leader managerial science has previously theorised about. It is much more than simply good stakeholder management.

We suggest that these leaders are likely to take a much wider view that will sometimes seem irrelevant, be passionate about community concerns, and yet still be able to reinterpret all this into the appropriate way the organisation should adapt either in terms of organisational processes or strategy or structure or even all three. They will need to

Table 1 Hazy's (2006) model of organisation outcomes with multilevel system measures

System level measures (Hazy 2006)	System level characteristics (Hazy 2006)	Individual leader/follower characteristics	Example individual leader/ follower measures
Revenue, cost of goods sold (COGS), expenses; financial capital and assets, human capital, knowledge over time (intangible assets).	System resource flow Rate of resource flow through the system; levels of resources available in the system.	Technical managerial skills Efficient use of resources including money and time. Disciplined production management processes that reduce waste	KPI's that measure resources to production output. E.g. timesheets analysed to determine if time is being used appropriately
Earnings, margins, efficiency benchmarks, cash flow; balance sheet items, expense levels versus benchmark levels.	System strength Rate of aggregation of slack or excess resources; level of slack as index of negative entropy.	Technical managerial skills Efficient matching of production to market demand and costs of production, timing of production	KPI's that measure and assess the market and adjust production (even individual production) as necessary
Return on assets (ROA) or equity (ROE), inventory, human and intangible assets (considered in terms of their rent production rates); net present value (NPV), real option value, return on invested capital (ROIC).	System capacity Capabilities to gain and use resources at appropriate rates; capabilities' creation and decline rates.	Ability to Learn, Adapt, Be Creative Capable of making more of what's around them, from themselves, their team, resources; including time and money	Measures, including KPI's, around innovation, opportunism, creativity, and 'reading' the market
Leadership activity to exploit current capabilities; leadership quality metrics with respect to best practices; leadership activity acceleration over time.	System growth Self-organising/leadership activity and its impact; resource allocation to exploit current capabilities and explore.	Individual Leadership Ability, Individual and Group level Culture Overall abilities capacity of leaders that span multiple styles and situations, ability to be flexible. Group values explored and individuals work out how they fit them	Measures that help to align group values and surrounding processes, individual leader employee engagement metrics, organisational culture metrics
Leadership activity to match capabilities to market demand; internal resources match to market resources; information flow across boundary, i.e. boundary permeability	System sustainability Matching of internal capabilities to environment by exploring for and climbing performance peaks on performance landscape.	Ability to read, predict and adapt to the market place	Measures around product purchaser behaviours, competitors behaviours. Individual KPI's that indicate how adaptations are proposed, created and their effects on the organisation's success
	To this, we add: Matching of internal needs with environment capacity, improving performance Matching of internal social needs with social capacity, improving performance	Ability to read, predict and adapt to the wider social and environmental context of the organisation as an agent of the CIDESS	Measures that directly link the organisation with its external environment, e.g. stakeholder interviewing, diversity of boards, etc. Individual KPI's that indicate how adaptations are proposed, created and their effects on the organisation's success, and how individuals assist the organisation in linking with its context, e.g. diversity measures

understand, engage in and promote wider CIDEESS thinking and will need to be able to deal with extensive amounts of complexity in information while also engaging with the emotions and motivations needed to navigate it. They will need to be management scientists in the widest sense of the word, able to mix all types of methodology of science, critical inquiry and practice to develop truly adaptable and socially cohesive organisations. In fact, it may be that EI at both the individual leader and group emergent 'leadership' level, will have increased significance in relation to leadership skill because it will improve leaders' ability to deal with the stressful demands of leading in complexity.

Emotional Intelligence and Human Capacity to Deal with Complexity

Emotional intelligence is a much disputed concept (Antonakis et al. 2009) promoted by many as essential to

leadership and disputed by others as irrelevant after personality and intelligence are controlled for (Antonakis 2003, 2004). The main argument here is that EI lacks discriminant validity, so in effect it is merely another way of describing something we already know about, making the concept redundant (Antonakis et al. 2009). However, EI has a kind of compelling 'common sense' to it since leadership is entrenched in emotion (George 2000; Dasborough 2006) and there is research to suggest that EI is linked to better leadership, although not when intelligence is factored in (Van Rooy and Viswesvaran 2004).

If what we propose above is a valid conceptualisation of organisations and organisations do operate as agents within a wider complex adaptive system(s) as Metcalf and Benn (2012) suggest, the concept of EI may simply suffer from too many factors creating confusing links to intelligence and personality. EI is proposed to be composed of four factors: emotion perception, emotion facilitation, emotion understanding and emotion management. Antonakis (in the letter exchange with Ashkanasy and Dasborough 2009) proposes that the reason intelligence and personality may be so closely aligned with EI is that a very intelligent person with an 'agreeable' personality can learn how best to respond to others according to their emotions. Hence, it may just be that high intelligence plus agreeable personality equals emotion perception, emotion facilitation and emotion understanding. It may also equal emotion management, at least in terms of the externalisation of emotion. In essence, Ashkanasy and Dasborough's (2009) argument tends to agree with Funke (2010) that emotions and problem solving are inherently closely linked, and as Funke (2010) asserts, this is particularly so as problems become more complex.

We argue here that authentic and internal 'emotion management' would be essential to the human capacity to deal with complexity, and even more important for those who have to lead others through it. Complexity creates decision-making problems for human beings, it increases the level of information that must be considered, the amount of interaction between factors and thus increases the number of errors we can make, if you're sensible of the error rate you are sensible of the increasing risk, this inevitably produces emotion. It may also be that some emotions actually help us in navigating complex information, as Funke (2010) suggests.

So, although EI in and of itself may be questionable, emotion management seems a likely contributor to the human capacity to lead through complexity, as we propose here. Further, we acknowledge that the human capacity to lead interpret and adapt to complexity, although it may be strongly linked to intelligence, will also have a powerful emotion management demand.

Conclusion

Finally, this examination of the existing disagreement and confusion over the multiple leadership styles related to the successful implementation of sustainability in organisations, has found that the solution lies in the complex nature of sustainability itself. In fact, the difficulty of the problem relates to the fact that it is the result of multiple layers of complexity: the complexity of sustainability, the complexity of complex problem solving and the complexity of leadership itself.

Hence, leadership for sustainability requires leaders of extraordinary abilities. These are likely to be leaders who can read and predict through complexity, can think through complex problems, engage groups in dynamic adaptive organisational change and can manage emotion appropriately. In essence, leaders and leadership is a key interpreter of how the complexity of the wider complex adaptive systems environment of the organisation 'links' internally to the organisation, and this link is a powerful mediator for successful implementation of sustainability, or may even be an expression of it. Leaders that do this will have to use the ability to navigate through complex environments, an element of complex problem solving that we are still endeavouring to describe.

Further research should look to address the links between the organisation and its wider CIDESS (Metcalf and Benn 2012). The complex adaptive systems leadership in the organisation may extend to other stakeholder groups—even shareholders. It may be that shareholders gravitate towards one or another organisation based on the values of that organisation, thereby making 'porousness' of organisation's links to the CIDESS even more strategically valuable in terms of the RBV of the firm. It will also be important to explore the emergence of leadership styles in an organisation that is endeavouring to be sustainable and to link the types of styles that are prominent with the kind of external environment 'sensemakng' that is going on, given our exploration of the complexity of the problem of CSR leadership, these leaders are likely to be operating cognitively, emotionally and motivationally in a way that will be highly useful to promote if we are to achieve whole Earth sustainability.

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