Insights into the development of strategy from a complexity perspective

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This paper provides an account of an ongoing project with an independent school in the UK. The project focuses on a strategy development intervention which, from the start, was systemic in orientation. The intention was to integrate simple systems concepts and approaches into the strategy development process to: address power relations in actively engaging a wide range of stakeholders with the school's strategy-making process; generate a range of good ideas; and make the strategy-making process transparent in order to inspire stakeholder confidence in, and commitment to, it and its outcomes. This paper describes how seeking to meet these aims entailed a series of workshops during the course of which an awareness of the relevance, in our interpretation, of Complex Adaptive Systems concepts grew.

Keywords: strategic development process; strategic planning; Complex Adaptive Systems; systems; social constructivism; schools

1. Introduction

In this paper, a reflective account is given of an ongoing strategy development project with an independent school in the UK. Throughout the project, we, the authors (one a facilitator and the other the project client), came together on a regular basis to share our thoughts on the change and intervention process. This sharing caused us to look towards Complex Adaptive Systems (CAS) as a lens that enabled us to make sense of our experiences and also affected our thinking about the intervention design; such an approach differs markedly to the dominant realist orthodoxy on CAS. Hence, a summary account will be given of these two contrasting CAS perspectives and lessons derived from each about the strategy development process. A strongly realist perspective implies the creation of the best possible model of the strategy development process and the organization as a CAS. The implications of a realist perspective are relatively clear; master the strategy model and implement in practice. In contrast, a social constructivist perspective requires multiple sources of complexity to be addressed through social interaction and personal critical thinking. However, the implications of such an approach are less clear, and this is taken up in the latter part of this paper. In summary, the paper makes a contribution to the discussion of what a CAS approach can contribute to the strategy development process.

2. Practicing strategy development

2.1. Pocklington School Foundation

In this part of the paper a case-study is presented that is a current project in progress. The project involves Pocklington School Foundation (PSF), an independent public school foundation established in 1514 and located in a small market town in Yorkshire, UK. An independent school in the UK is a school that is not financed by

taxpayers or through the taxation system by local or national government, and is instead funded by private sources, predominantly in the form of fees, gifts and charitable endowments. The foundation comprises a junior school, for boarding and day pupils of ages 4–11, and a senior school, for boarding and day pupils ages 11–18. In total, there are currently approximately 789 pupils.

PSF is a registered charity and a limited company; its directors are known as governors. The board of governors is comprised of volunteers who play an active role in the strategic management of PSF, as suggested by the Department for Children, Schools and Families (2010):

> Governing bodies are an integral part of school leadership, setting the ethos of the school, driving continuous improvement, supporting, challenging and holding to account the head teacher and other members of the school leadership team by negotiating stretching targets for improvements in standards, and monitoring progress towards them. (p 6)

Essentially, the board of governors is responsible for strategic direction, whereas operational and day-to-day management are the concern of the foundation management group (FMG) led by the headmaster.

The engagement with PSF started with a request for assistance in June 2009. At the time, the headmaster, a co-author of this paper, was relatively new in the post having been appointed in January 2008. The original stated aim was to promote understanding of the strategic management process and to enable a statement of shared vision, mission and values to be produced. Although it was initially envisaged that this would involve the facilitation of a single workshop, it has actually involved a whole series of workshops with various stakeholders and the engagement is ongoing.

2.2. The intervention process

For the purposes of this paper, the description of the intervention process will be structured around Eden et al's (2009) four process modules: (a) understanding stakeholders; (b) strategy mapping; (c) developing a business model and (d) exploring ramifications through time. Given a common systemic multi-method orientation, it is not surprising that Eden et al's approach and concerns resonated with the work undertaken.

2.2.1. Understanding stakeholders

From the initial contact, the headmaster's dedication to 'getting the process right' was explicit and he was supportive of the facilitators 'taking time to get to know the place'. Following various meetings between the headmaster, the chair of the board of governors and the facilitators, commitment to involving as wide and diverse a group of stakeholders as possible was established. This commitment is congruent with the systemic commitment to the process of boundary critique (Ulrich, 1983; Midgley et al, 1998; Midgley, 2000, 2011; Foote et al, 2007). It was recognized that this commitment involved giving a voice to important stakeholders, such as the pupils, who might otherwise be overlooked.

A series of workshops took place over a period of a year (see Table 1). The duration of this phase of the project is important as it demonstrates a commitment to the engagement of a wide range of stakeholders and to incremental change, respecting the fact that individual development and absorption of new ways of working was non-linear.

Table 1 Workshop schedule

Workshop	Stakeholder group	Focus
Workshop 1 (June 2009)	Governors, Foundation Management Group	Creating a vision Agreeing values Drafting a mission
Workshops 2–4 (Jan-Feb 2010)	Staff	Engaging stakeholders
Workshop 5 (March 2010)	Parents	Building capacity
Workshop 6 (April 2010)	Friends of PSF	Validating vision, values and mission
Workshop 7 (May 2010)	Pupils	Generating goals
Workshop 8 (May 2010)	Foundation Management Group	
Workshop 9 (June 2010)	Governors, Headmaster, Bursar	Summarizing goals through a simplified form of cluster analysis Analysing position (internal strengths/weaknesses and external opportunities/threats) Evaluating goals

2.2.2. Strategy mapping

The need for a 'trigger to interaction' was recognized; so the idea was to focus the workshops around an established approach to strategy making. Following Styhre (2002), we stepped away from the notion of a mechanical ontological approach to modelling and strategy making, based on the assumption of linear causality, to one in which 'organization change is seen as being complex, integrated, socially embedded and socially dependent process affected by a variety of causes and concerns' (p 344). Hence the model of the strategy development process was regarded as a heuristic device. It did not matter so much which approach to strategy making was selected; merely that one should be used to generate engagement, discussion and focus participants' attention on the process of strategy making. To this end, the work of Collins and Porras (1996) was selected.

According to Collins and Porras (1996), great organizations 'understand the difference between what should never change and what should be open for change, between what is genuinely sacred and what is not' (p 66). This view of strategy is represented through the Taoist symbol and it is worth also noting that Capra (1975) and Morgan (1986) also refer to this image as it represents 'the primordial opposites guiding all change'. In practice, it was found useful to employ slightly different terms to those used by Collins and Porras, and it is this adapted form that is described here. The unchanging element is the core ideology, the yin, which defines why the organization exists (vision) and what it stands for (values). Just as yin is complemented by yang, so the unchanging element is complemented by that which is open to change, the mission.

The mission is the driving aspiration enduring over the next 10-to-30-years given current and projected political, economic, social, technological, legal, environmental and other conditions. The mission is underpinned by a set of goals, specifying what the organization is going to do, plus associated objectives, specifying how the goals are to be achieved. This representation of strategy provided a focus for all of the workshops (a summary of the series of workshops is presented in Table 1).

2.2.2.1. Workshop 1 (June 2009)

Discussion at this workshop revealed that governors were familiar with the established vision and values (see Table 2) of PSF and there was general support for their relevance and enduring nature. More problematic though was the mission statement, as this required the governors to express their deep understanding of the issues facing PSF and 'make real' the vision. Through a rich picture exercise (Checkland, 1981; Checkland and Poulter, 2006) governors were able to communicate and capture in detail, using simple visual symbols and metaphors, their perceptions of PSF's current problems (existing attractor pattern captured through a rich picture of the situation 'as is') and a vision of the future that it is commonly regarded as being worth working towards (rich picture of 'ideal' state). Note that this is a use of rich picturing that is different to the one advocated by Checkland (1981), as he confines the use of this technique to representing people's perceptions of the current problematic situation alone. Our adoption of methods and techniques is in line with the approach to the creative design of methods described by Midgley (2000).

Table 2 Vision, values and mission statement

Vision	To inspire for life.
Values	Trust: The foundation's Christian ethos guides our caring and straightforward approach where we treat each other with respect. Truth: We value debate which is open, honest and informed to stimulate creativity, intellectual curiosity and initiative. Courage: We challenge ourselves and each other to change for the better.
Mission	To be a leading school foundation in Yorkshire.

The governors worked on creating their rich pictures in small teams. From the start of the exercise, there was a lot of discussion as ideas were generated, understanding developed and decisions about what should be included in the rich picture negotiated. Figure 1, an example of a PSF 'as is' rich picture, emphasizes a results-driven culture that goes beyond academic performance to include music, drama and sports which is complemented by values relating to care and location in a community ('the town'). Change is also highlighted in terms of the threat of falling pupil numbers, competition from other schools and the consequent impact on finances. The challenge to 'change for the better' is recognized particularly in terms of staffing and infrastructure. The stark imagery of the 'as is' rich picture contrasts with an example of an 'ideal' state rich picture (Figure 2) which focuses on a fantasy-like desert island with the sun rising, nirvana on the horizon and lots of happy pupils and staff purposefully engaged in a variety of activities.

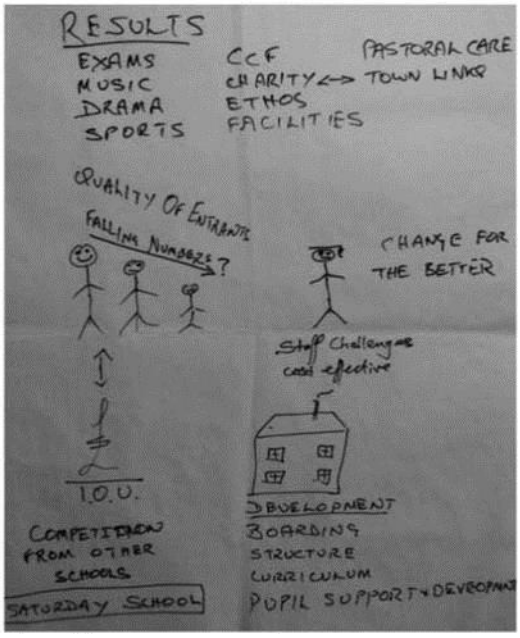

Figure 1 Governors' rich picture of PSF 'as is'

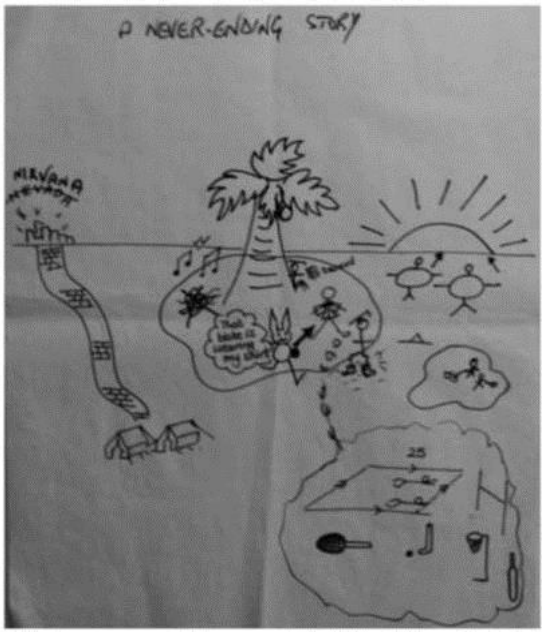

Figure 2 Governors' rich picture of PSF 'ideal'

Following this exercise, a statement of PSF's vision and values (see Table 2) was circulated in order to inform and stimulate a debate about what an appropriate mission might be to provide focus to the effort to shift PSF from the 'as is' towards the 'ideal'. The mission statement shown in Table 2 was quickly articulated and accepted as achievable in PSF's own terms which emphasized, as reflected in the rich picture examples, activities that serve to develop the whole child in a supportive environment.

Informal feedback suggested that the workshop had created a space for engagement and reflection. The rich picture exercise was particularly highlighted as being creative, fun and led to a shared sense of purpose among governors.

2.2.2.2. Workshops 2–8 (January-May 2010)

On the basis of the perceived success of the workshop with the board of governors, the facilitators were invited to work with various groups of PSF stakeholders (teaching staff, support staff, managers, parents, pupils, Old Pocklingtonians and friends of PSF) on articulating a set of clear and compelling goals to serve as a focal point of effort.

Workshops, each lasting approximately two hours, were based around a Nominal Group Technique (NGT) exercise (Van de Ven and Delbecq, 1971), as we judged that this approach would serve our fore-mentioned aims in:

- promoting equal participation and consequent commitment to whatever choice or ranking is produced;
- eliminating peer pressure and the dominance of more articulate or powerful individuals; and
- enabling the facilitators to 'hand-over' the method due to its simplicity and transparency.

The first part of the NGT exercise involved participants separately developing their own answers to the trigger question 'To become a leading school (foundation) in Yorkshire we need to…'. Individual responses were then revealed, round-robin style, to produce a composite list. Finally, everyone voted on their top three goals.

The workshops were designed to work at two levels in two ways. First, awareness of the continuous and non-linear development of stakeholders meant that attention was given to different levels of understanding and motivation. The workshops were designed in such a way that they engaged those who only wanted to participate in the workshops, and also prepared those who wanted to go on to facilitate other such events. Indeed, participants did go on to facilitate later workshops, but rolling-out in this way was limited due to the demands of the academic calendar. The workshops were designed to work at two levels in another sense also: at one level the focus was on making strategy for PSF but at another level there was a human focus with participants being invited to take responsibility for their relations of belonging, reflecting concerns about active organizational citizenship (following the work of Organ, see eg Smith et al, 1983, and Organ and Ryan, 1995), purpose alignment and commitment. This particular concern required careful consideration as either the organization or the individual is foregrounded in much strategy work whereas adopting an approach based on systems theory required respect for the co-creation of the two.

It was clear, during the workshops, that many participants had a pause for reflection in which they assessed what they personally got from their involvement with PSF and what engagement they wanted in the future. The facilitators looked for signals of this, such as Old Pocklingtonians espousing their commitment and the multiple, seemingly spontaneous, expressions of voluntary support by fee paying parents: association with PSF was clearly significant in the formation of participants' identities (one participant reflected that PSF was 'in their bones').

Active engagement in the workshops was evident through participants making the trigger question for the NGT exercise (based on the mission statement) problematic as this was only planned to be part of the initial workshop. Indeed, the mission statement was an attractor throughout the process as we repeated the 'amend—agree' cycle several times. As a result of this, a number of other versions of the mission statement were generated, including:

- to be the leading school foundation in Yorkshire, and
- to be a world class school in Yorkshire.

Although the changes to the mission statement might appear minor to an external observer, they were clearly significant for participants, and concerns that were articulated through discussion included: balancing being over-ambitious with not being ambitious enough, and developing a message that had both international and local appeal.

2.2.3. Developing a business model and exploring ramifications through time

After seven workshops, almost a hundred stakeholders had been involved in the strategy workshops and over 120 ideas for goals had been expressed. Informal comments about 'the next stage' suggested a readiness to move the process on. To this end, a workshop was held with the board of governors and the FMG in June 2010 to engage them in synthesizing (Houghton and Metcalfe, 2010) and evaluating the goal statements from the workshops into a coherent expression of intent, without loss of the complexity or richness of the ideas being expressed. A simplified form of cluster analysis led to the articulation of a set of overarching goals (see Box 1 for the final goal statement).

Box 1 Mission and goal statement

To be world class schools in Yorkshire we need...

Our pupils and their personal development

1. To be excellent in learning and teaching
2. To equip our pupils for life through opportunities within and beyond the classroom
3. To provide a high standard of pastoral care

Our school and the wider community

1. To provide the best possible supportive 'home from home' environment for our boarders
2. To communicate clearly and distinctively our vision, values and ambition within and beyond the school
3. To involve current and former parents, Old Pocklingtonians and others for the benefit of our pupils and the wider community

The foundation and us

1. To employ the best staff and manage their ongoing training, development and wellbeing
2. To provide facilities and services that support our pupils' education
3. To ensure effective and efficient decision making and planning at all levels supported by sound financial management

Part of the focus of the workshop on goals was again on attunement, an expression of becoming at a particular time and in a particular place, that may focus not only on internal matters but also an analysis of the environment. To this end, some of the more traditional strategic planning tools were used, such as SWOT (see Table 3) and PEST. As a result, it emerged that the definition of distinctive competences, in the light of customer demands (following Eden and Ackermann, 2000), was relatively unproblematic because they (pupils and parents) had been actively engaged in the workshops and strategy-making process.

Table 3 Summary SWOT analysis

Strengths	Weaknesses
• Commitment and enthusiasm of staff • Teacher:pupil ratio • New staff—what extra can they offer? • Boarding ethos • Value added—but how do we market? • Curriculum—classroom and beyond • New facilities eg Library, 6th form • Parent as a resource	• The portacabins • Late and outstanding fees • Marketing, website, use of database • Boarding programme and pupil diversity • Culture for change • Engaging with Old Pocklingtonians and parents • IT provision (funding)
Opportunities	**Threats**
• State sector—cuts and dissatisfaction • Parents wanting best for their children • Boarders—emerging nations and weak £ • Sympathetic Government • Geographical position • Communication technologies	• Recession and job insecurity • Armed forces relocation and reduction in boarding allowances • Cost of higher education • Other schools—also free and academy • Grandparents' funding • Regulation volume • Terrorism—air travel

Following this analysis, the suggested goals were evaluated against the criteria expressed in Table 4. Testing the goals against different possible financial futures enabled governors to explore and evaluate without making a commitment to action. Hence, as in previous workshops, emphasis was placed on using strategic analysis and decision support tools as heuristic devices to facilitate engagement and debate and not decision making flowing from a mechanical analysis. In the light of this process, it was felt that three areas were not sufficiently addressed (public benefit, the financial base and boarding provision) and the goals were amended accordingly.

Table 4 Goal evaluation criteria

Emerging goals	Are they realistic based on our distinctive competences?
	Are they robust given different scenarios of our future environment?
	Are they clear and compelling?
Statement as a whole	Is the statement coherent or do some of the goals contradict?
	Have some areas of activity been overlooked? If so, what goals need adding?
	Taken together, are these goals necessary and sufficient for the achievement of our mission?

Throughout this process, the emphasis was, once again, on managing the tensions and potential synergies between the individuals and the organization as much of the discussion focused on the governors' individual and shared commitment to, and responsibility for, creating the future of an organization with almost a 500-year history.

2.3. Taking the work forwards

The start of the 2010–2011 school year commenced with a presentation to the whole PSF staff body and other invited participants about the strategy-making process. As a result of the last workshop and subsequent discussion, a succinct statement of the goals of PSF (see Box 1) was presented along with a summary account of the process that had led to it. To aid transparency and accountability, supporting documentation was also made available.

Prior to the presentation, the headmaster had already had several meetings with the FMG and had identified individuals to lead each of the teams that would 'own' the goals and be responsible for defining relevant measures of performance and for specifying how they would be achieved. This was a great step towards achieving a viable structure for PSF, enabling self-organization of the parts within the cohesive whole (Beer, 1979, 1981, 1985; Espejo and Harnden, 1989; Hoverstadt, 2008). The idea was to ensure that the organization possessed sufficient variety to enable it to cope with emergent environmental complexity on an ongoing basis.

3. Interpreting the intervention through a constructivist CAS lens

It has previously been mentioned that, throughout the project, the authors of this paper (one a facilitator and the other the headmaster) came together on a regular basis to share reflections on the change process. The importance of such reflection is recognized by Espejo (1996) who states,

> Naturally, most of the time I am thrown into action; I have no time to reflect upon experiences, I adjust to them, and these adjustments define my knowledge space. However, from time to time, as I experience breaks in the flow of these actions I may pause to reflect upon my experiences. These observations will have no relevance whatsoever if I fail to express them in some form of action. Languaging these reflections is a crucial form of action. (pp 415–416).

As part of our pause for reflection, PSF was viewed through a variety of lenses (including that of a Human Activity System following Checkland, 1981, and Wilson, 1990) to see which best enabled us to make sense of the PSF intervention. The lens that we found offered us the richest appreciation of PSF was that of a CAS and, as a result, we sought to draw out the implications of this.

3.1. Contrasting perspectives on complexity

Tsoukas and Hatch (2001) draw attention to the established orthodoxy in complexity, derived mainly from the Santa Fe Institute, which is to adopt a strongly realist ontology and to define the common principles underlying a variety of systems (see, eg, Buckley, 1967, 1968 and Holland, 1992). Although different paradigms in complexity research are recognized (see, eg, Midgley and Richardson, 2007), moving beyond the established orthodoxy is not easy. Indeed, Jackson (2003) recounts the reflections of Stacey, a long established theorist on complexity, on the shift of mind that is evident in his own work (Stacey, 2000, 2003); thus,

> He believed that organizations literally were complex adaptive systems, that they could be understood and that prescriptions about how they should be managed could be produced. He was simply, he now believes, restating the dominant discourse using the vocabulary of complexity theory. (p 124)

In the light of such admissions, it is important to explore what a social constructivist perspective on CAS involves and offers. Social constructivism (the father of this approach is widely regarded to be Vygotsky, 1978, but also see, eg, Kuhn, 1970, and Giddens, 1984) is closely related to social constructionism (Berger and Luckman, 1967). The former emphasizes learning that takes place at the individual level through interactions with others, while the latter focuses on the production of artefacts. Both approaches are pertinent to the theme of this paper but a social constructivist line will be followed, as a concern of this paper is to understand strategy making as a process for learning about the potential for being at both the individual and organizational levels. In defining social constructivism (following Svarstad et al, 2008), we can distinguish between ontological relativism and epistemological relativism. On the one hand, ontological relativism suggests that reality is determined by the observer. On the other hand, epistemological relativism accepts the existence of a reality independent of human thought but argues that we can never know reality exactly as it is. As such, human perceptions of reality can, through research, be shown to be correct or incorrect. This paper is based on the moderate form of constructivism, accepting epistemological relativism while rejecting ontological.

Following a social constructivist route based on epistemological relativism enables us to see the 'organization' as real in the sense that it is an emergent intersubjective representation, with some reference in the world that exists outside of the individual mind, even though the distance between the inter-subjective representation and the referent can never be determined. However, social constructions are not necessarily uncontested, and such an approach drives a focus on the communicative processes through which social constructs such as 'the organization' and 'strategy' are created, reproduced and transformed. Hence a significant break is made with the strongly realist version of strategy making that privileges modelling and strategic assessment/positioning. From a social constructivist perspective, a model of the strategy-making process and models used in strategic assessment serve more as heuristic devices to facilitate engagement and stimulate discussion than to represent reality (others have also reflected critically on the model-building process; see, eg, Howick and Eden, 2011, and Pidd, 2010). Hence, following Checkland (1981), the model-building process is privileged rather than the model.

Strategy making from a complexity perspective should be seen as iterative, emergent and hence difficult to model and embed in a rigid methodology. As Jackson (2003) states, organizations should be seen as 'emerging from the relationships between their members and complexity theory needs to concentrate on paradox, difference, spontaneity and diversity'. That said, a model or methodology of the strategy-making process can be used as a heuristic device to facilitate engagement and stimulate discussion. In the case of PSF, Collins and Porras's (1996) work was found useful as it reflects fundamental systems ideas, particularly the ability to manage continuity and change. Such a model can be introduced as a device to help participants in the strategy-making process organize their thoughts, which is important as Tsoukas and Hatch (2001) reflect that complexity is 'not only a feature of the system under study but also a matter of the way we organize our thinking about such systems'. Tsoukas and Hatch elaborate on this and conclude that 'if an observer's language is complex enough, the system at hand will be described in a complex way and thus will be interpreted as a complex system. What complexity science has done is to draw our attention to certain features of systems' behaviours which were hitherto unremarked'. Just as the Collins and Porras (1996) model adds variety to the language used to describe the strategy-making process by defining such terms as vision, mission, goals, etc, so too Hammer et al (2012) add variety to our understanding of complexity.

Hammer et al (2012) propose a conceptual framework derived from the work of Cilliers (1998), Stacey (2001) and Mitleton-Kelly (2003) on CAS and Dyson et al (2007) on the strategic development process. The conceptual framework is used by Hammer et al in an interpretivist way to 'explore how an organization develops its overall strategy'. The feasibility of such an approach is questionable given the characteristics of a CAS but it is the composite list of characteristics grouped to reflect four facets of CAS, though, that is of interest here (note that some characteristics contribute to more than one facet and 'Self-Organization' is a facet which also underlies all of the others). To be clear, this composite list, although it was not available at the time of the workshops, summarizes well the characteristics that were considered during the project. Hence we use the list here to draw together our reflections and present illustrative examples from the PSF case which, although not mapping directly on to each characteristic, do, in our view, reflect the spirit of the facet being explored (Tables 5–7).

Table 5 focuses on the Continuous Varying Interactions (CVI) facet which is pertinent to Espejo's (1996) work on complex systems which regards organizations to be structures in which participants, as interacting actors, create the space for further actions. As observers, organizational participants' are able to reflect on how these structures both constrain and enable their actions. Hence 'the challenge is to create enabling structures which allow for effective action in participants' self-selected action domains' (Espejo, 1996, p 414). Complementary to this line of argument is the notion that the strategy-making process can create space for generative processes of reflection, self-construction and negotiated destiny at both the individual and organizational levels. Espejo, like others, refers to the process of alignment of individual and organizational goals, but here this process is regarded as necessary but not sufficient. Rather, following Henderson (2007), the notion of attunement, an emergent shared sense of being in the moment and appreciation of individual and joint potential for being, was held as an ideal within the context of ideas about communication, consensus and commitment (Rouwette, 2011).

Table 5 Continuous varying interactions (CVI) (based on Hammer et al, 2012)

CAS characteristics	*Project examples*
• *Local and remote*: the richest interactions between people usually occur locally within the relationship network of the organization, but influences can be far reaching and remote connections may be important due to non-linearity. • *Non-linear interactions*: unpredictable cause/effect relationships. Small actions can have big effects, big actions can have minimal effects, and the scale of effects cannot be predicted. • *Positive and negative feedbacks*: both developmental and restraining forces can exist within the system. • *Large number of elements*: could be number of people or the relationships between them or both. • *Continuous interaction*: endless, repeating and dynamic interaction between people through communication within and external to the organization. • *Connected open systems*: active or passive interactions with other CAS which can be at various levels of integration within and external to the organization. • *Rich interactions*: high to low quality, changing, developing, iterative and self-referential. • *Relationships co-evolve*: production of ongoing variety in the rules (traditions, customs, etc) of the relationship.	• Awareness of participants embodying multiple stakeholder roles (some staff are also parents, some governors are Old Pocklingtonians, etc). • Workshops were designed in such a way that they engaged those who only wanted to participate in the workshops and also prepared those who wanted to go on to facilitate other such events. This improved the scaleability of the project. • Rich picture exercise was regarded as being creative, fun and led to a sense of understanding among governors through views being negotiated and renegotiated with others. • Sensitivity to the effects and sources of actions particularly how they are perceived either as developmental and/or restraining forces. The headmaster was particularly aware of this and the potential for his engagement in the process to affect others. • Engagement of stakeholder groups sometimes excluded from planning such as pupils. • Management of engagement issues. For example, some parents were reluctant to engage in the process as, while recognizing its importance, they felt that they 'didn't know enough about strategy'; hence, the language of strategy making was introduced carefully and focussed more on a conversation about what was valued about PSF, what might be changed and why. • Appreciate boundary scanning potential. Pupils in particular were acutely aware of their own experiences of PSF and others' experiences elsewhere due to siblings and step-siblings attending other schools. • Stories of informal interactions and engagement with the process beyond the workshops were captured, for example groundsmen chatting to the headmaster on his morning walk around the school.

Table 6 contains details of Patterns Development (PD) and, while evolution on the basis of continuous transformation is a feature of CAS and managers can, according to Jackson (2003), 'lay aside the burden of trying to plan, organize and control everything' (p 119), there may be times when a change in the behaviour of a CAS is desirable. Morgan (1997) recognizes this and outlines a process for enabling changes in CASs which involves questioning the existing attractor pattern of behaviour and shifting to another more desirable one by reinforcing small changes so that they can be used to big effect.

Table 6 Patterns development (PD) (based on Hammer et al, 2012)

CAS characteristics	*Project examples*
• *Patterns emerge*: coherent patterns of order emerge spontaneously and become 'attractors' which may develop the pattern further. • *Origins of patterns*: are unpredictable in time and place. • *Stable and far-from-equilibrium*: CAS can cope, adapt, survive and prosper in periods of turbulence so stability is not a requirement for progress and can lead to atrophy. • *Patterns and 'attractors'*: can be stabilizing (orderly), de-stabilizing (chaotic) or both simultaneously (chaordic).	• Incidents of reflections on how the strategy might change decision making and patterns of behaviour were captured. An example of this was the explicit reflection on how values should drive decision making (the idea to opt out of the league-tables was quickly rejected as 'not being true to our values of truth and courage'). • Recognition of a change in culture with more open discussion and engagement in decision making. • Repeated revisiting of the mission statement.

The focus of Table 7 is People Factors (PF) and Self-Organization (SO) and it can be surmised from these that a CAS perspective triggers a concern for widespread participation in change (whole system engagement even) and how this might be brought about. While there is the potential for using OR techniques to support large group participation (following, eg, Bunker and Alban, 1997, 2005; White, 2002; Holman et al, 2007; Bryant et al, 2011), others (eg, Braybrooke and Lindblom, 1963; Friend and Hickling, 2005) emphasize incremental steps in a continuing decision

process. Such a consideration and emphasis are shared with second-order cybernetics. As Espejo (1996) has argued,

> Effective participation requires that all of us are involved in the invention and formation of self-constructed action spaces. This is in contrast to participation in organizations where a few create the context for the most, that is, where the organizational context of our actions is constructed (for us) rather than self-constructed. (p 414).

Consequently, we planned a series of strategy-making workshops as open spaces for engagement and self-construction with the hope that these would spread (increasing interest in the 'role' of strategy workshops in strategizing practice is evidenced in the work of, eg, Hodgkinson et al, 2006; Whittington et al, 2006; Schwarz, 2009). Such workshops provide a 'space for reflection' (Espejo, 1996; Henderson, 2007) and vigilance to new ways of thinking and working was encouraged as demonstration that changes discussed in the workshops were being internalized and embedded in operational practices (Horlick-Jones and Rosenhead, 2007).

Table 7 People factors (PF) and self-organization (SO) (based on Hammer et al, 2012)

CAS characteristics	*Project examples*
• *Whole system ignorance:* no one person within the CAS can have complete knowledge of the CAS because it is too complex and dynamic, which contributes to risks and uncertainties that affect people and organizations. • *Histories*: origins and histories of development of both people and the CAS are very important because development options can be preferred, locked in or out, and influence options choices for future actions (path dependency). • *Space possibilities*: CAS can explore the 'space' and time possibilities into which they can develop by adapting existing conditions, because people can think, learn, imagine and make decisions. • *Active engagement*: the creation of environments in which stakeholders can freely associate to develop their own plans and forms of future association/being.	• As news of participants' experiences of the workshops spread, willingness to be involved increased and perceived receptivity to the suggestion of change increased which made feasible the 'rolling-out' of workshops through participants in the first round of workshops being willing to facilitate later workshops. This illustrated capacity building at the local level through the 'giving away' of the problem structuring and decision-making methods. • Age of the school (nearly 500 years) and some stakeholders' long associations with it created a sense of responsibility which affected attitudes to risk and this was discussed on various occasions. • Models were used as heuristics devices to facilitate engagement and stimulate discussion about different business models. • Strategy and systems language was introduced to enable participants to better describe their various experiences and observations of complexity, for example, in the organization, strategy development, etc • Those working in the system were actively engaged on an ongoing basis in strategy making as they were both constituting the organization through their moment-to-moment interactions and observing it (first- and second-order complexity).

On the basis of the above, like Hammer et al (2012), we agree that complexity should not merely be regarded as a 'disturbance' and concur that it might be a source of practical understanding. More than this, it presents an opportunity. Using the idea of a CAS has, in a social constructivist way, informed and continues to inform the development of strategy making in PSF. We are continually reflecting on the engagement and, with each interaction, looking for guidance; firstly, about what is happening and why it is happening and, secondly, about how we might respond.

3.2. Reflection

The emergent design of the PSF intervention and strategy has been recounted in this paper and throughout an attempt has been made to highlight what our reflection on a CAS approach added. It should be recognized, though, that concepts from CAS are not uniquely essential for a constructivist approach to strategy development involving the engagement of multiple stakeholders (for an influential discussion of such an approach from a multi-method perspective see Eden et al, 2009, and Jackson's comment, 2009a) and this forces the question of 'what does a CAS lens add that is distinctive?' Understanding the characteristics of CAS led both the facilitators and the client to appreciate

that each would and should be regarded as a perturbation from the other's environment, to be responded to in their own way (a view influenced by work on the autopoietic notion of structural coupling following Maturana and Varela, 1980; Mingers, 1989, 1995). Both parties recognized the need to be responsive to the other and to appreciate the value of planning as a process for bringing about preparedness for alternative paths rather than developing one best way. Indeed, accepting this led to a lack of defensiveness when either party was challenged or asked to do things in a different way. Our evolving responses to perturbations from the other are important for generating learning essential for viability. This view also made the disengagement-re-engagement process easier as we viewed ourselves as being in a coupled relationship; involved and yet at the same time separate. Hence, the realization of this kind of strategy making, reflecting current discussions on the relationship between operational research and systems (Jackson, 2009b; Ormerod, 2011), is both theoretically informed and practically oriented.

4. Conclusions

Making the nature of complexity itself complex is important. Questioning the dominant realist view of CAS by adopting an alternative 'lens', such as that offered by social constructivism, forces us to consider a variety of sources of complexity. In this paper the implications of a social constructivist approach to CAS were drawn out. From this perspective, we are encouraged to abandon strategy making as a mechanical process based on rational analysis and, rather, see the strategy process as complex, non-linear and emergent; a view which holds important lessons for both the facilitators and clients of strategy interventions. Further, while a CAS view might seem to suggest that attempts to develop models of or methodology for strategy development are worthless, this is not the case as they are highlighted as heuristic devices that add variety to communication and enable better appreciation of complexity itself. Ironically, it is recognized that, while we might regard a CAS as having value because it sheds light on some aspects of the process and our experience of it which we feel are important, a complexity approach also suggests that its value is questionable since it might hide more than it reveals.

In conclusion, seeing organizations and strategy as socially constructed emergent products demands that respect be paid to both the individual within the emergent whole and the coupling of facilitators with the client system. Such an approach enables strategy development to become a more practical and human process.

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