

# Changing an Organisation's Culture with Systems Thinking

## A Case Study from the Financial Services Industry

**Paul Bettle**

**Abstract** This research has studied three aspects of a multi-method Systems Thinking intervention in a large Service Organisation. Firstly, an experiment studied its effectiveness in terms of changing the leaders in the organisation thinking. The second and third aspects looked at issues relating to success and sustainability of the programme, specifically, the major system conditions and the level in the organisation at which there must be an understanding and acceptance of Systems Thinking. Analysis of the experimental results showed that the intervention had started to cause a change in thinking, from command and control to systems thinking, in the experiment group relative to the control group. However, the change could not be shown to be statistically different between the beginning and end of the experiment. Observations made throughout the intervention identified two major systems conditions threatening the success and sustainability of the programme. The first system condition relates to multiple parties competing for the role of the customer across the organisation, e.g. the service user vs. shareholders, who are owned by different parts of the organisation. This results in different parts of the business having different, competing purposes. The second system condition relates to the link between business and individual measures in the current world, which are anchoring the organisation in the command and control way of thinking.

**Keywords** Systems thinking • Financial services • Culture change • Performance management • Multi-methodology • Multiple and conflicting purposes • Service industry

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## 1 Introduction

Over the past 15 years a large financial services organisation, in common with many other service based companies, has launched numerous improvement programmes using approaches such as Six Sigma and Lean through a central in-house improvement team. The earlier programmes did achieve some initial success, but did not sustain. Often unravelling as soon as the central team members moved on to their next assignment.

In the view of the researcher, these programmes fell into the trap of becoming all about implementing Lean tools, rather than seeing Lean as a Systems approach, and the delivery of value to the customer through embedding Lean principles and capability in the operations across the whole *end-to-end* value stream. As such, the programmes inevitably focussed on cost saving through driving transactional efficiencies in the customer facing operations.

The organisation has realised that it needs to move away from the tools based approaches of the past to take a more systemic view of organisational improvement. As such, a new programme was launched in September 2013, with Systems Thinking principles at its core.

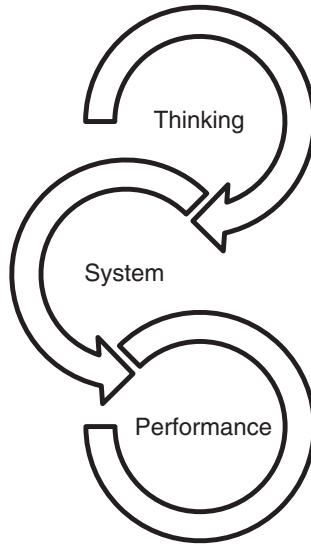
The purpose of this research project is to establish if taking a whole system approach, rather than tools based, can help the programme to achieve its objectives, and to establish if there are any other factors (system conditions) outside of the programme design that directly impact its potential success and sustainability.

The programme design has two complimentary elements that combine multiple systems approaches. This is something of an experiment in itself, as these two particular practitioner based approaches have not been combined in this way. However, the researcher believes there is a strong theoretical basis for doing so. The first element involves the redesign the end-to-end core customer journeys from the top down. Whilst at the same time, the second element will focus on changing the thinking of frontline leaders and building the capability of the organisation from the bottom up.

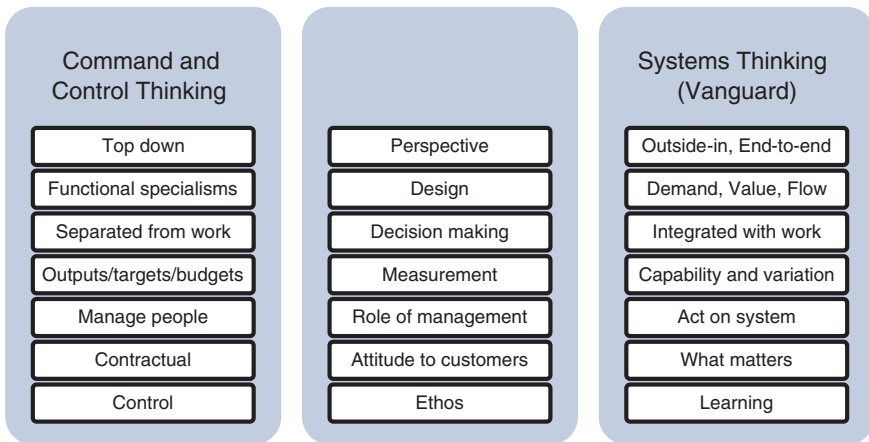
The core systems approach to be used across both elements in the intervention will be the Vanguard Method. According to Seddon (2005), it is the current thinking or logic in an organisation that drives the design of that system. The design of the system in turn will determine how well that system performs. Therefore, unless you can change the thinking of those responsible, in order to design a better system, the performance will not improve (see Fig. 1).

Seddon (2005) calls the current way of thinking in western management ‘Command and Control Thinking’. Command and Control does not mean being bossy, it means separating decision making from the work (Seddon 2013). Command and Control Thinking is contrasted with Vanguard’s Systems Thinking in Fig. 2.

Quite often in a System, certain less powerful groups are often ignored and do not necessarily have their voices heard. Giving these groups a voice is known as emancipation. This is one of the objectives of the second element of the



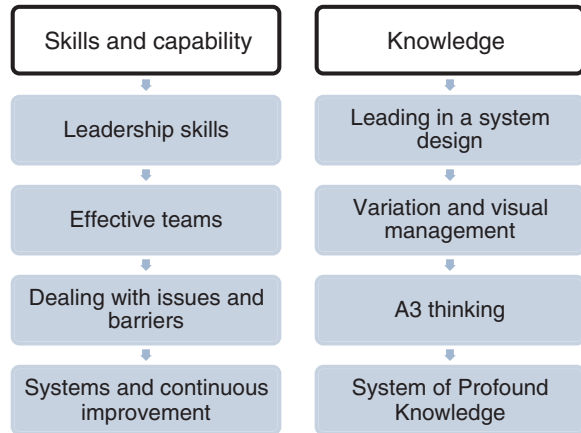
**Fig. 1** Vanguard's thinking-system-performance framework. Adapted from Seddon (2005)



**Fig. 2** Command and control versus systems thinking. Adapted from Seddon (2005: 11)

programme, as it will give a voice to the frontline leaders in the organisation. Typically, in the past, their roles and responsibilities, measures and work design are handed down to them to execute with no input from themselves. During the second element of the programme, the frontline leaders will study the work in their areas and reflect on what their roles should be and how they could better measure the work their teams are doing.

**Fig. 3** Components of the skills, capability and knowledge uplift for frontline managers



As they will not get the skills to do this from the Vanguard Method alone, another complementary Systems Approach, based on action learning, will be run in parallel which will focus on building the skills, capabilities and knowledge of these frontline leaders (see Fig. 3).

## 2 Research Project

A controlled experiment was conducted within the intervention to establish if a direct link could be made between the intervention and any measurable change in thinking that may occur during the intervention.

More specifically, this research project set out to answer the following research questions, described in Sect. 2.1, and to achieve the objectives described in Sect. 2.2.

### 2.1 Research Questions

- To what extent will a whole organisation, multi-method approach to the implementation of a systems thinking intervention, from the top down and the bottom up, change the way managers and frontline leaders think about their business; specifically in terms of the role of a leader, measures and targets and capabilities?
- At what level in the organisation must there be an understanding and acceptance of the counter-intuitive dimensions of Systems Thinking in order increase its likelihood of success?
- To what extent do current system conditions and thinking inhibit the successful deployment of Systems Thinking?

## 2.2 Research Objectives

- To establish the critical success factors of a Systems Thinking intervention.
- To identify opportunities to improve the current methodology for future interventions across the wider organisation.
- To understand the barriers to a successful Systems Thinking implementation.
- To understand how measures can be used to change management thinking.

## 3 Literature Review

### 3.1 What Is a System?

According to Deming (1994: p. 50), one of the original *Systems Thinkers*, a system is a network of interdependent components that work together to try to accomplish the aim of the system. Figure 4 shows Deming's famous diagram of an organisation represented as a system. The system must have an aim, or a purpose. All the components of the system will contribute to achieving the purpose of the system, but none of the parts on their own can achieve that purpose. A popular analogy is that of a car as a system, whose purpose is to transport people from one location to another. None of the individual components of the car, such as the engine or chassis, can achieve this purpose on their own; they must work together as a system to do so (Scholtes 1998). The properties the system exhibits are that of the whole rather than those of the individual components (Checkland 1981).

Jackson (2003) identifies six different types of system:

- Physical
- Biological
- Designed
- Abstract (Checkland 1981 describes this as designed abstract)
- Social
- Human activity

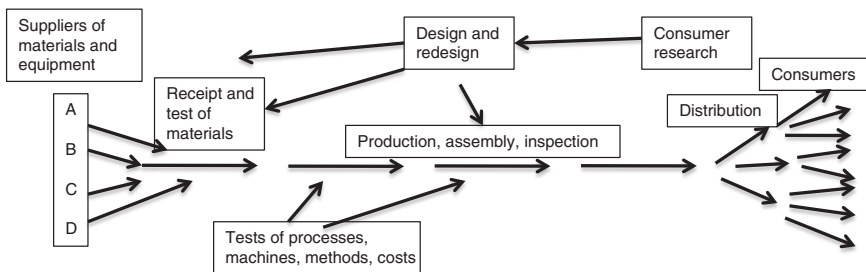


Fig. 4 Production viewed as a system. Adapted from Deming (1982: 4)

### 3.2 Systems Thinking Approaches

Checkland (1981) describes Systems Thinking not as a discipline in its own right, but rather a way of thinking about a problem. This way of thinking is centred on two themes:

- Emergence and Hierarchy—in a system exists *organised complexity*. A system contains a hierarchy of complexity, described as levels, the highest level being the most complex and each level being more complex than the next level down. Emergence refers to the properties seen at each level in the hierarchy. Properties emerge at each level that cannot be seen in the level below.
- Communication and Control—a complex hierarchy of levels within an open system must have a process of *communication and control* in order to detect and react to changes in its external in internal environments.

A major split in Systems Thinking approaches started to emerge during the 1970s to deal with the complexities inherent in organisational systems and the multiple purposes held by the human social systems that exist within them.

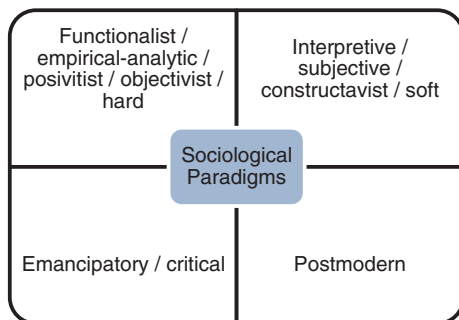
Interestingly, Systems Thinkers seemed to split along the lines of either dealing with complexity or dealing with multiple purposes, not both, whilst at the same time academics continued to develop Hard Systems ideas in various Universities (Jackson 2003). Systems Thinkers also tended to anchor themselves to, and develop their approach within, a particular sociological paradigm, described in Fig. 5 (Jackson 2003; Mingers and Broklesby 1997; Checkland 1981).

Jackson also illustrates this split in terms of problem contexts as shown in Fig. 6. The approaches that emerged during this time tend to fit into one of these boxes, that is, those developing the approach make an assumption that the box can describe an organisation.

These approaches have continued to be developed along these lines to present day. They do not cross over, either vertically or horizontally, into other contexts, or other paradigms. Indeed, most approaches have their own academic journal aligned to it. The effect has been to take them further and further apart.

The main approaches developed in the academic world are shown in Fig. 7.

**Fig. 5** Sociological paradigms



|                |  | PARTICIPANTS   |  |                                |
|----------------|--|--|--|--------------------------------|
|                |  | <b>UNITARY</b>   | <b>PLURALISTIC</b>                                   | <b>COERCIVE</b>                |
|                |  | Common purpose and similar values / beliefs                        | Purpose compatible but values and beliefs not shared | Conflicting values and beliefs |
| <b>SYSTEMS</b> | <b>SIMPLE</b>                                  | <b>Simple-Unitary</b>  | <b>Simple-Pluralistic</b>                            | <b>Simple-Coercive</b>         |
|                | Few subsystems with structured interactions    | Hard Systems Thinking  | Soft Systems Approaches                              | Emancipatory Systems Thinking  |
|                | <b>COMPLEX</b>                                 | <b>Complex-Unitary</b>   | <b>Complex-Pluralistic</b>                           | <b>Complex-Coercive</b>        |
|                | Many subsystems with unstructured interactions | System Dynamics<br>Organisational Cybernetics<br>Complexity Theory | Soft Systems Approaches                              | Postmodern Systems Thinking    |

Fig. 6 Jackson and Keys grid of problem contexts. Adapted from Jackson (2003: 18, 24)

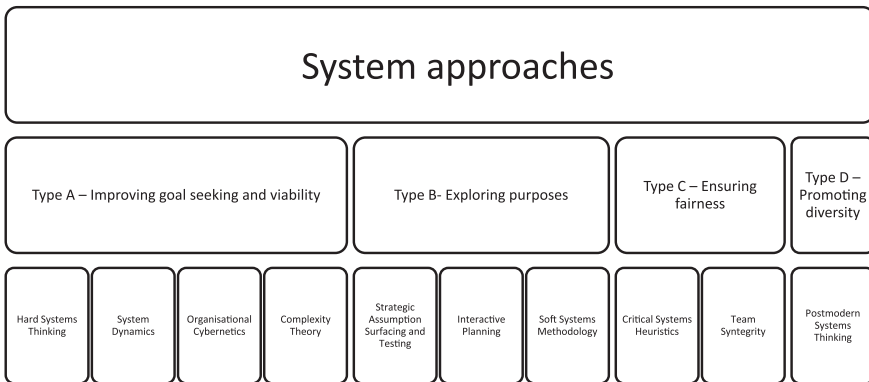


Fig. 7 The main systems thinking approaches organised by type. Adapted from Jackson (2003: xxiii)

### 3.2.1 The Vanguard Method

Deming (1982) believes that it is necessary to study the whole system in order to be able to make it better for customers, a view strongly shared by Seddon.

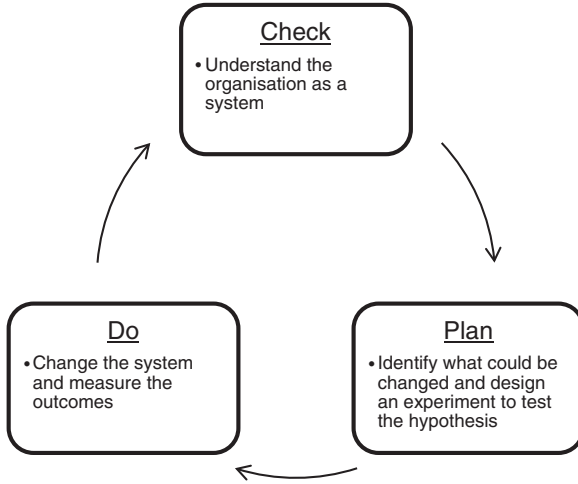


Fig. 8 The Vanguard approach to service improvement. Adapted from Seddon (2005: 110)

Figure 8 illustrates the Vanguard Consulting approach to service improvement, developed by Seddon. This review will just focus to the check stage (see Fig. 9) in more detail, as this is the main area of focus for this research. The ‘check’ approach is summarised in Table 1.

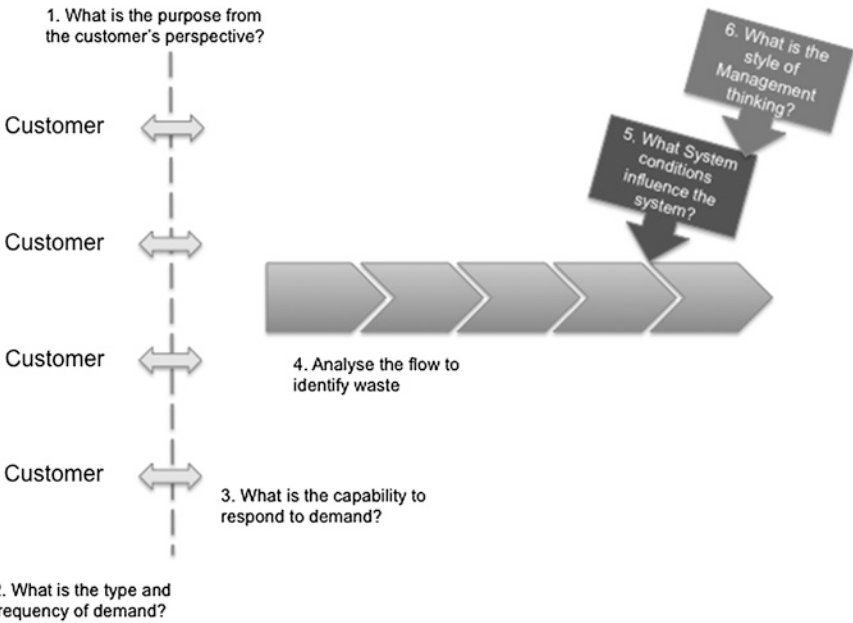


Fig. 9 The Vanguard ‘check’ method. Adapted from Seddon (2005: 112)



**Table 1** The Vanguard model for check

| Step  | Overview  |
|---|---|
| Step one—understand purpose from the customer’s perspective | Seddon (2005) argues that you must first understand the customer’s purpose before you can determine how best to deliver a service to them. As a consequence of not understanding the purpose organisations will likely have measures that are aligned to business objectives and not around delivering customer purpose. The achievement the measures (targets) becomes the purpose of the organisation (Seddon 2005). Stepping back and looking at purpose helps to keep the view of the whole system and helps to avoid the sub-optimisation of its parts (Bicheno 2008)  |
| Step two—understand the type and frequency of demand        | The customer purpose is used to determine which demands are value and which are failure. Value demand is demand that meets the customer’s purpose; it is demand that they want to initiate. Seddon (2005) defines failure demand as ‘ <i>a failure to do something or do something right for the customer</i> ’. The level of failure demand that an organisation is experiencing is an indication of the amount of unnecessary work in the organisation  |
| Step three—understand the capability of the organisation    | Deming (1982) talks at length about management’s failure to understand the variation of the system. To understand if the organisation can respond to demand in a predictable way, a measure must be identified that is aligned to the customer’s purpose  |
| Step four—understand the flow                               | Flow is particularly important to customers in a service. They will experience any interruption to flow that results in a delay first hand, giving them a negative perception that is hard to recover from and will likely result in failure demand   |
| Step five—understand system conditions                      | <p>System conditions are the underlying causes of waste. They have a profound effect on the way an organisation behaves. System conditions come from an organisations:</p> <ul style="list-style-type: none"> <li>• Policies, processes and procedures</li> <li>• Measures, targets and performance management</li> <li>• IT systems</li> <li>• Organisational structure</li> </ul> <p>Seddon considers measures the most important system condition. Spitzer (2007) describes measurement as the lens through which the performance of the organisation is viewed, thus making it <i>the most fundamental management system upon which other management systems are based</i>. Therefore if the measurement lens is focussed on the wrong things, bad decisions will be triggered in all of the other management systems. But this is not the only issue with measuring the wrong things; according to Kohn (1993) measures will impact the way in which people do things. This is because they supersede any other motivations that a person might have, consequently they change the <i>attitude</i> a person takes towards the work that they are doing</p> <p>A reward will often increase the likelihood of us doing something, but more often than not, it changes the way in which we do it, usually for the worse, and is only effective in the short term (Kohn 1993). Seddon (2005) observes that imposed targets will almost certainly result in employees using their ingenuity to ‘game’ the system in pursuit of achieving the target. This is something that the researcher has witnessed occurring right up to the senior levels in the operation during the research. The senior managers are aware that it is happening, but feel they have little choice given the pressure they are under to achieve the targets. This starts to explain why it is given so much attention when an SLA is breached</p> |

(continued)

**Table 1** (continued)

| Step                                    | Overview  |
|---|---|
|   | Deming (1982) defined seven deadly diseases that are prevalent in western organisations. The third deadly disease relates to the <i>evaluation of performance, merit rating or annual reviews</i> . Any performance management system that is centred on management by objectives and numbers will lead to the following issues: <ul style="list-style-type: none"> <li>• A focus on short term delivery at the expense of long term planning</li> <li>• A demotivated workforce</li> </ul> |
| Step six—understand management thinking | An organisations culture is a reflection of the beliefs of management (Bicheno 2008). Is the management focus on fulfilling a purpose relating to the business or is it on meeting the customer purpose?  |

Jackson (2009) acknowledges that whilst the Vanguard Method has not been widely reviewed by academics, it is having considerable success in practice, particularly in the UK Public Sector. Jackson et al. (2008) argues that the Vanguard Method may encounter problems when trying to define the purpose of the system when presented with multiple parties, competing for the role of customer. The Vanguard Method does not take account of these competing world views and variety of purposes that this may result in. Jackson et al. (2008) further argues that there is a risk that the Vanguard Method allows the optimisation of a sub-system without understanding if this might sub-optimize the wider system. Jackson et al. (2008) concludes that the Vanguard Method is essentially a hard systems approach, when assessed on the System of System Methodology framework (see Fig. 10), but has the ability to deal with complexity and some pluralist concerns, leading him to suggest that methodology expansion could be a viable alternative to Multi-methodology.

### 3.3 Combining Different Systems Approaches, in Theory and in Practice

#### 3.3.1 Combining Systems Approaches in Theory

This section will review the literature to try and identify if there is a theoretical basis to support the combining Systems Approaches, and if so, how it should be undertaken. Mingers and Broklesby (1997: p. 491) describes the possible ways in which Systems Approaches can be combined (see Table 2).

Systems Approaches developed in the academic world tend to be aligned to a particular paradigm and the set of assumptions that underpins the thinking within that paradigm. There has been much debate amongst academics relating to the constraints of *paradigm incommensurability* preventing the ability to combine

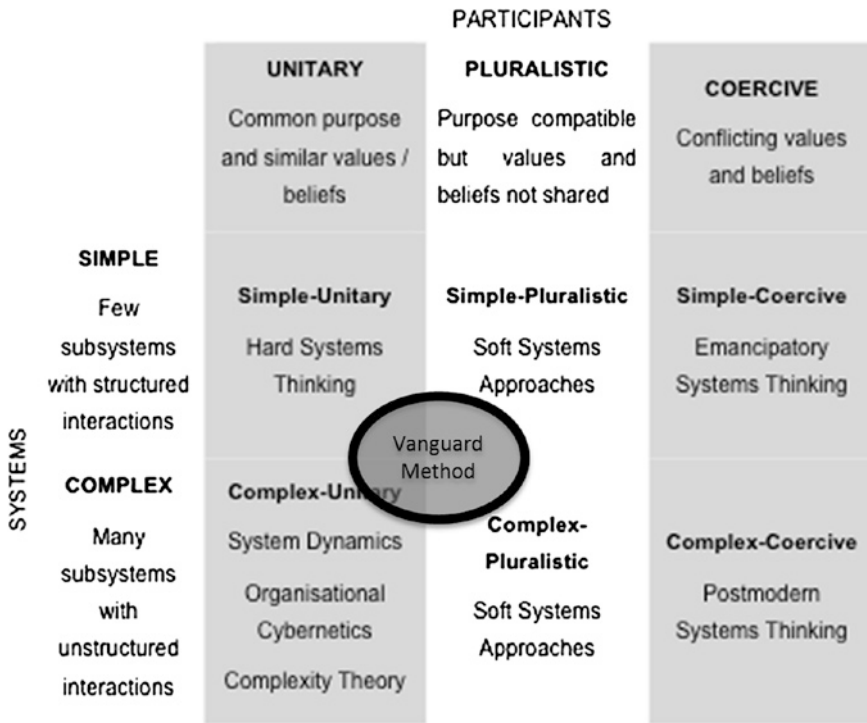


Fig. 10 The Vanguard method assessed on the SOSM. Adapted from Jackson et al. (2008: 196)

Systems Approaches (Mingers and Broklesby 1997; Kotiadis and Mingers 2006). The argument being that the theoretical logic and assumptions inherent within the paradigm, upon which the different approaches are built, are in incompatible because of their different world views and cannot be reconciled (Mingers and Broklesby 1997; Jackson 2003). Shepherd and Challenger (2013) found the use of paradigms and the concept of paradigm incommensurability to still be widespread in management research.

A second challenge to combining Systems Approaches relates to cultural feasibility. That is the experiences of the practitioner using the approaches and their assumptions about the world (Mingers and Broklesby 1997; Kotiadis and Mingers 2006). If a practitioner's experience and training is predominately rooted in a particular paradigm, they may find it difficult if they have to then operate in another when using a different approach.

Another challenge is the cognitive feasibility. Practitioners will have different personality types that will naturally have a preference for a particular approach and operating within a particular paradigm.

**Table 2** Options for combing systems approaches

| Name                        | Description  | Multiparadigm? | Example  |
|-----------------------------|--|----------------|--|
| Methodological isolationism | Using only one methodology from only one paradigm                    | Single         | Soft systems methodology only or operational research only                     |
| Methodology enhancement     | Enhancing a methodology with techniques from another                 | Single         | Cognitive mapping used in Soft systems methodology                             |
|                             |  | Multiple       | Jackson systems development used in soft systems methodology                   |
| Methodology selection       | Selecting whole methodologies as appropriate to particular situation | Multiple       | Using a Hard approach in one situation and Soft systems methodology in another |
| Methodology combination     | Combining whole methodologies in an intervention                     | Multiple       | Using interactive planning and the viable systems model                        |
| Multi-methodology           | Partitioning methodologies and combining parts                       | Single         | Using cognitive mapping, root definitions, commitment packages                 |
|                             |  | Multiple       | Using cognitive mapping and systems dynamics                                   |

Adapted from Mingers and Broklesby (1997: p. 491)

### A System of Systems Methodologies

Jackson and Keys (1984) started to explore the idea of combining Systems Approaches as long ago as early 1980s. They discovered that particular approaches, rather than competing to be used for general problem solving and trying to claim they can solve any problem, they should limit their use to the context for which they are best suited. From this analysis, they derived what they term a System of Systems Methodologies.

Jackson (1990) describes how the System of Systems Methodologies might be used in the real world to select an appropriate methodology. Jackson recognises the limitations of this approach in the paper, questioning how many real world problems will neatly fall into one of the resulting contexts and to what extent coercion will affect the decision made. Jackson argues that the System of Systems Methodologies can be used to highlight the relative strengths and weakness of the various Systems Approaches. Jackson argues that this also allows problems to be considered using different perspectives and as such problem contexts, this would also mean opening the way for using different Systems Approaches to tackle the same problem, although he does not go as far as to say approaches could be combined.

Jackson’s Critical Systems Thinking (Creative Holism) and Total System Intervention

Critical Systems Thinking aims to achieve three goals (Beckford 2002):

1. Complementarism—different problems may require different approaches to solve them. Critical Systems Thinking requires the *most appropriate* approach be used to solve a problem, but with the awareness of the theory and assumptions associated with that approach.
2. Sociological awareness—recognition that the culture of organisations is different and will change over time. This must be considered when selecting an appropriate approach for an intervention.
3. Emancipation—supports an inclusive approach and frees people from existing constraints.

Jackson (2003; p. 283) cites Habermas as arguing that humans have two conditions underpinning their lives:

1. Work—humans achieve satisfaction through working. They have an inherent ‘technical interest’ in *predicting and controlling* the systems in which they operate.
2. Interaction—humans seek to gain the *mutual understanding* of those operating in the system, said to be a ‘practical interest’.

Equally important, according to Habermas, is the understanding of the use of power within a system, which can prevent gaining a proper understand of work and interaction due to inadequate engagement of those involved. Humans operating in a system will naturally seek to be engaged and to break out of the constraints of power, this is described as having an ‘emancipatory interest’.

This led Flood and Jackson to argue, in their 1991 book (cited in reference list although not available to these researcher), that the different systems approaches can in fact be aligned to each of the three human interests identified by Habermas (see Fig. 11), and that the human interest level sits above that of paradigms thus overcoming the challenges imposed by paradigm commensurability.

Total Systems Intervention is the meta-methodology by which Critical Systems Thinking is put into practice. It encourages looking at problems from a number of

**Fig. 11** Aligning systems approaches to Habermas human interests. Adapted from Jackson (2003)

| Technical interest  | Practical interest  | Emancipatory interest   |
|---|---|---|
| <ul style="list-style-type: none"> <li>• Hard</li> <li>• Systems Dynamics</li> <li>• Organisational Cybernetics</li> <li>• Complexity Theory</li> </ul> | <ul style="list-style-type: none"> <li>• Soft Systems Thinking</li> </ul> | <ul style="list-style-type: none"> <li>• Critical System Heuristics</li> <li>• Team Syntegrity</li> </ul> |

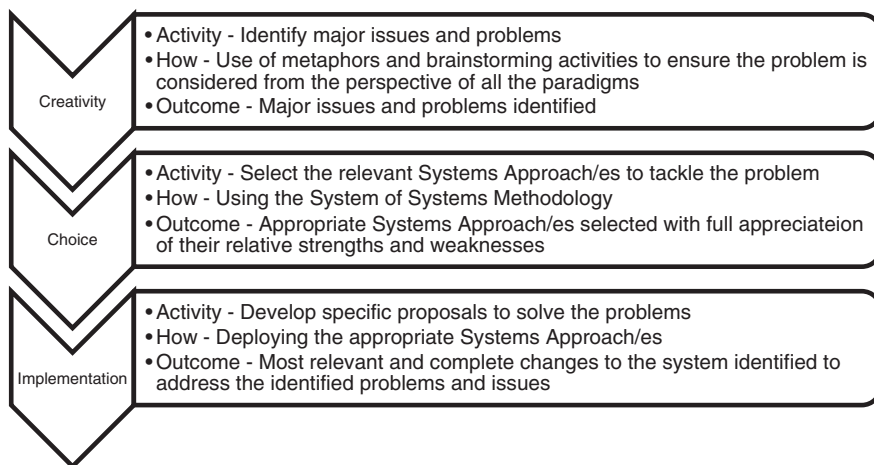


Fig. 12 Total system intervention methodology. Adapted from Jackson (2003, 2006)

different perspectives, using metaphors as a guide, in order to aid the selection of the appropriate Systems Approach or set of Approaches that are most suited to that particular problem. Total Systems Intervention has three phases called Creativity, Choice and Implementation. The three phases are outlined in Fig. 12.

### Ulrich's Critical Systems Thinking—Critically Systemic Discourse

Ulrich (2003) believes that Jackson's interpretation of Critical Systems Thinking and the Total Systems Intervention methodology does not deal adequately enough with the emancipatory issues. Firstly, the methodology forces a choice as to whether or not to include an emancipatory approach in the analysis of a problem. Secondly, the System of Systems Methodology isolates the emancipatory approaches to purely coercive problem situations. Ulrich argues that most real world situations will in fact be coercive.

Ulrich prefers not to think of situations in terms of either being coercive or non-coercive, but rather as a range of discourse situations in which there will be a varying distortion/asymmetry of power.

Ulrich also believes there is a general misunderstanding relating to Habermas concept of emancipatory interest. If interpreted from an ideological stance, it would suggest that the role of a practitioner is to favour, and stand up for, groups that they determine to be somehow disadvantaged. Ulrich argues that this is not how Habermas uses the term. He in fact uses the term from a methodological perspective in terms of securing a discourse in which the participants involved have an equal opportunity to be heard.

Ulrich instead suggests that emancipatory interest should be elevated to the critical level thus making it integral to any intervention.

**Table 3** The five principles of critically systemic Discourse

| Principle                  | Overview  |
|----------------------------|---|
| Discourse                  | Promotes a discourse-theoretic framework  |
| The role of civil society  | All participants in a system are provided with numerous opportunities to raise concerns to avoid bias on choice of methodology      |
| Emancipatory orientation   | Moves emancipatory interest from ideology to methodology and away from being a choice to being a core principle                     |
| Systemic boundary critique | Challenge the validity of solutions through critical review of system boundary judgements   |
| Deep complementarism       | Emancipatory interest and system boundary critique are raised to the critical level and not subordinated to a methodological choice |

Adapted from Ulrich (2003)

Ulrich proposes that Critical Systems Thinking needs to make the conceptual step to Critically Systemic Discourse. He sets out five principles of Critically Systemic Discourse, which are described in Table 3.

### Mingers’ Multi-methodology

Mingers and Brocklesby (1997), Mingers (2001) present four arguments as to why combining different Systems Approaches is not just desirable, but also necessary. In his first argument, he describes working in only one paradigm as like looking through a particular instrument, such as telescope or an MRI scanner. Each will reveal something completely different that the other cannot. Unfortunately, in the real world it not like this, it is in fact multi-dimensional. When you apply a single approach from a particular paradigm to a real world problem situation, it would mean you would only understand the problem from one perspective. Mingers and Brocklesby (1997) have developed a framework, based on the work of Habermas and also that of Searle, to show three dimensions that will all exist in a real world problem; this framework is illustrated in Fig. 13.

The second argument put forward by Mingers and Brocklesby looks at intervention as a process. The basis of this argument is that any intervention will go through multiple stages (see Fig. 14). Each stage will have different activities as part of it. Mingers and Brocklesby argue that it is not likely a single approach will

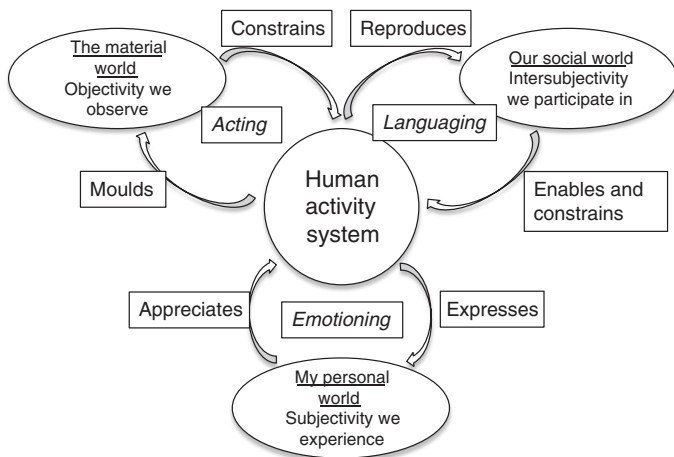


Fig. 13 Three dimensions of problem situations. Adapted from Mingers and Brocklesby (1997: 493)



Fig. 14 Stages of an intervention. Adapted from Mingers and Brocklesby (1997)

adequately cover all of these stages and their associated activities, some will be better at on particular stage and set of activities and vice versa. As such, combining different approaches would result in a much more complete intervention.

The third argument put forward by Mingers and Brocklesby is that practice is already well ahead of the theory relating to the combining of Systems Approaches. There are now numerous examples of a combination of different Systems Approaches having been successfully applied in solving real world problems.

The final argument Mingers and Brocklesby use in support of combining Systems Approaches is the relationship to postmodernism, which fundamentally challenges established ways of thinking. Postmodern thinking would support the idea that combining approaches should not be constrained by current theoretical barriers.

Rather than accept paradigm incommensurability as a given Mingers and Brocklesby cite research that suggests there is no obligation to adhere to it. For example, the work of Weaver and Gioia (1994), Giddens (1984) questions the validity of the claims relating to paradigm incommensurability based on the objective and subjective paradigms being mutually exclusive. Shepherd and Challenger (2013) have found grounds to reject the concept of paradigm incommensurability and find strong arguments to support *paradigm pluralism*.



|          | Appreciation of                        | Analysis of                                    | Assessment of                                    | Action to                              |
|----------|--|--|--|--|
| Social   | Social practices, power relations      | Distortions, conflicts, interests              | Ways of altering existing structures             | Generate empowerment and enlightenment |
| Personal | Individual beliefs, meanings, emotions | Differing perceptions and personal rationality | Alternative conceptualisations and constructions | Generate accommodation and consensus   |
| Material | Physical circumstances                 | Underlying causal structure                    | Alternative physical and structural arrangements | Select and implement best alternatives |

Fig. 15 Mingers framework for mapping systems approaches (Mingers and Brocklesby 1997: 501)

Mingers and Brocklesby (1997) have developed a matrix with the three dimensions of problem situations on one axis and the stages of the intervention on the other (see Fig. 15). In each box on the matrix there are questions relating to that particular stage and dimension that must be addressed. This matrix can then be used to assess the relative merits and weaknesses of each Systems Approach in addressing the various questions posed.

Mingers and Brocklesby state that this should not be a one off exercise, but should be done in consideration of the problem situation being addressed.

### 3.3.2 Combining Systems Approaches in Practice

One of the main drivers for the development of the theory to support the combining of different Systems Approaches was that it was already being done in practice, leaving the theory behind to some extent (Munro and Mingers 2002).

Munro and Mingers (2002) conducted research to try to establish the extent to which Systems Approaches are being combined in practice. The authors concluded, from the examples in the research, that combining systems approaches in practice has been relatively successful. They also found:

- Few examples where Hard and Soft approaches had been brought together.
- Combinations of approaches chosen tended to reflect the background of the practitioner in terms of experience and education.
- Relatively little data as to why and/or how the various combinations of approaches were arrived at.

### 3.3.3 New Thinking

Zhu (2010) believes the link between systems approaches and paradigms is no longer useful, and may even be holding the field back from making significant

advances. Zhu cites significant evidence to support this stance. Particularly given that there are now multiple examples of practitioners ignoring so called paradigm incommensurability in the real world. Zhu further argues that is now necessary to move beyond creating multi/meta method frameworks that attempt to solve the paradigm constraints. Instead, Zhu (2010) suggests a pragmatist approach needs to be adopted.

## 4 Methodology

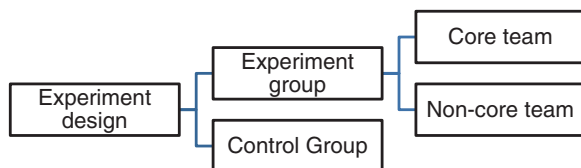
This research project has adopted the pragmatist philosophy. This philosophy encourages the use of whatever methodological choice best helps to answer the research questions (Saunders et al. 2012). In the case of this research project, both quantitative and qualitative research was required in order to answer the research questions satisfactorily.

The Vanguard Method, one of the systems intervention approaches being used in this research project, is arguably a form of *action research* in its own right. However, because this research project is trying to establish a link between sets of variables, independent of trying to actually make improvements in the business (which is the main aim of the intervention) in which the research project is operating, a *classical experiment* was run within the intervention.

The experiment (see Fig. 16) included the group involved in the intervention (the experiment group) and a control group who performed a similar function in the organisation, but were not involved in the intervention. The experiment group was further broken down into a core-team who were involved in the check phase and capability building element of the intervention, and the non-core team who were just part of the capability building element of the intervention. The experiment collected quantitative data, from both an experiment group and the control group, in order to attempt to establish the answer to the first research question and establish if there is a link between the intervention and a change in thinking. A questionnaire was designed to investigate opinion variables relating to how thought about a subject, in this case if the participants thinking was more aligned to Command and Control or Vanguards Systems Thinking (see Fig. 2).

The experiment also collected qualitative data, through direct observation and informal interviews in order to answer the remaining questions. Because of

Fig. 16 The experiment design



the author's role of practitioner in the intervention, the author felt it might also be useful to provide additional context and insight through presenting these in a *Narrative* strategy.

## 5 Analysis and Discussion

### 5.1 Results

Prior to commencing the intervention, it was important to establish the current thinking within each of the three groups and to identify if there was any measurable difference between them. As such, the members of each group were asked to complete the experiment questionnaire in the week before the intervention started. This data, illustrated in Fig. 17, will then form a baseline against which any changes of thinking can be measured at the end of the 'check' phase of the intervention.

Figure 17 shows that, visually at least, each of the different groups has answered the questions in much the same way. Three two sample t-tests (see Fig. 18), assuming equal variances, have been completed for each question, to test if there is a difference in means between each of the groups. The results for the t-test show, that for all questions, there is statistically no difference between the group's answers.

Although the t-tests demonstrate that there is no statistical difference between the groups, there are still some interesting observations that can be drawn from the data. Table 4 shows the mean answer for each of the experiment groups and the control group.

The results clearly indicate that there is a strong preference towards command and control thinking across all of the groups. There is a particularly strong preference for command and control thinking relating to measures.

#### 5.1.1 End of 'Check' Phase (Week 6)—Has the Thinking Changed?

At the end of the 'check' phase of the project, which fell at around six weeks from the start of the intervention, each of the groups was given the same questionnaire to complete. The overall results are summarised in Fig. 19 and Table 5, which show the average answer for each question for each of the experiment groups.

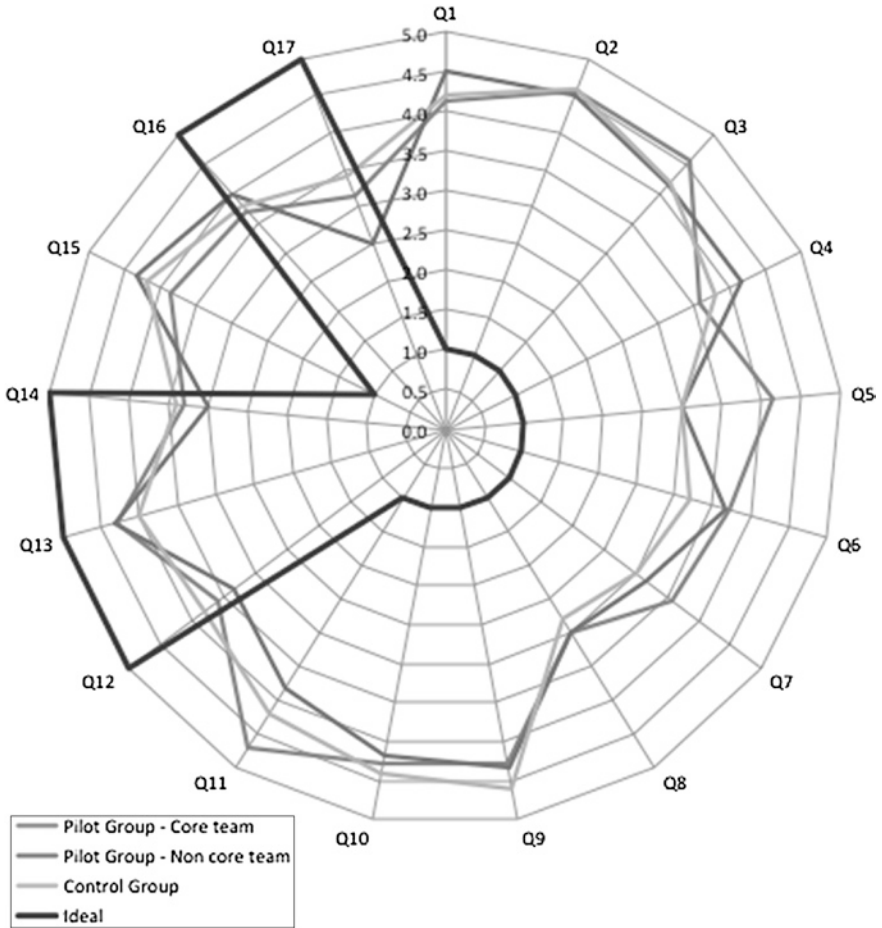


Fig. 17 Diagram showing the average answer for each group and an ideal 'systems thinking' response pre-intervention

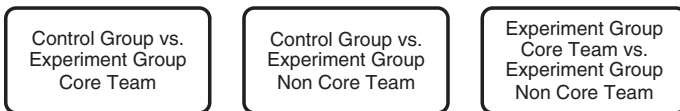


Fig. 18 Two sample t-test combinations completed

**Table 4** Table showing the average answer for each of the experiment groups pre-intervention

| Group                     | Question                       |     |     |     |     |     |     |     |  |     |     |     |     |     |     |     |     |   |  |  |
|---------------------------|--------------------------------|-----|-----|-----|-----|-----|-----|-----|--|-----|-----|-----|-----|-----|-----|-----|-----|---|--|--|
|                           | Questions relating to measures |     |     |     |     |     |     |     | Questions relating to the role of a leader |     |     |     |     |     |     |     |     | Questions relating to management of change and capability |  |  |
|                           | 1                              | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9  | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  |   |  |  |
| Pilot group—core team     | 4.1                            | 4.6 | 4.6 | 3.6 | 4.1 | 3.7 | 3.6 | 3.0 | 4.3  | 4.3 | 4.7 | 3.6 | 4.3 | 3.3 | 3.9 | 3.7 | 3.1 |   |  |  |
| Pilot group—non core team | 4.5                            | 4.5 | 4.2 | 4.2 | 3.0 | 3.7 | 3.2 | 3.0 | 4.3  | 4.2 | 3.8 | 3.3 | 4.3 | 3.0 | 4.3 | 4.0 | 2.5 |   |  |  |
| Control group             | 4.2                            | 4.6 | 4.2 | 3.8 | 3.0 | 3.2 | 3.0 | 2.8 | 4.6  | 4.4 | 4.2 | 3.8 | 4.0 | 3.4 | 4.2 | 3.8 | 3.4 |   |  |  |
| Grand total               | 4.3                            | 4.6 | 4.3 | 3.8 | 3.4 | 3.6 | 3.3 | 2.9 | 4.4  | 4.3 | 4.3 | 3.6 | 4.2 | 3.2 | 4.1 | 3.8 | 3.0 |   |  |  |

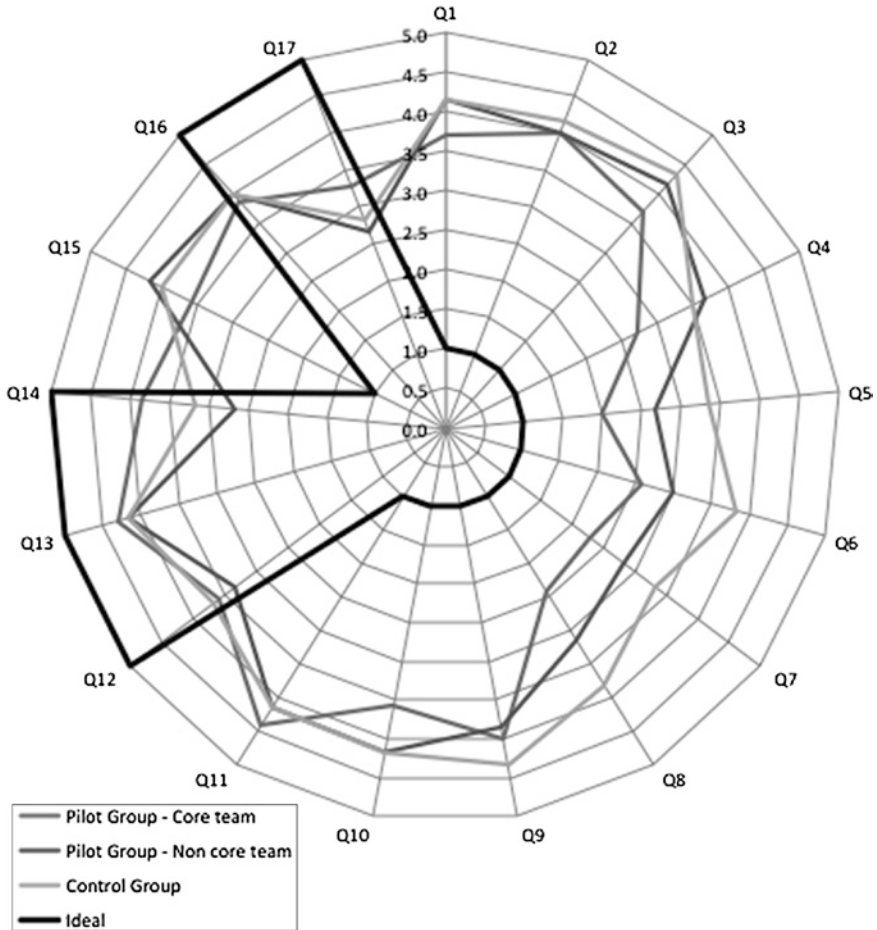


Fig. 19 Diagram showing the average answer for each group and an ideal ‘systems thinking’ response at the end of the ‘check’ phase (week 6)

## 5.2 Summary

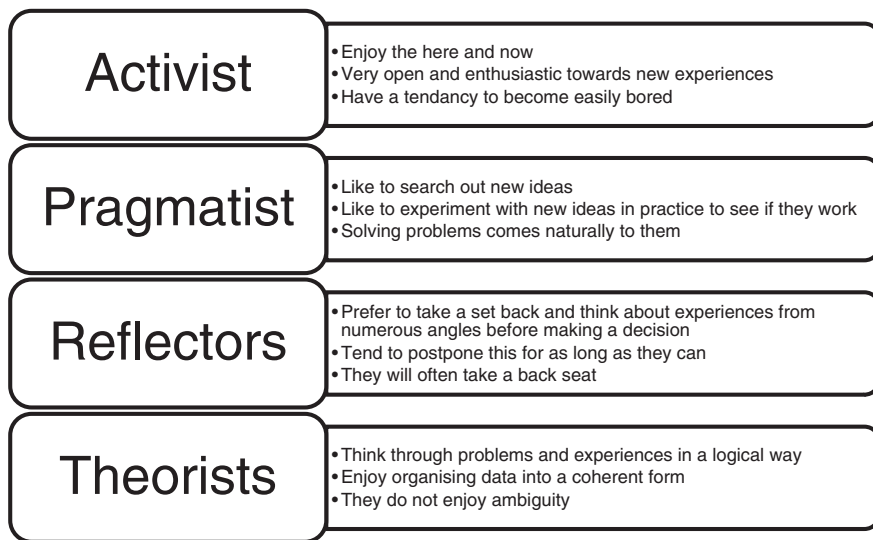
This experiment set out to answer the first research question from Sect. 2.1.

The hypothesis being tested was:

- The multi-system approach will cause a measurable change in thinking from command and control thinking to systems thinking specifically relating to:
  - Measures
  - The role of a leader, and
  - Skills and capability

**Table 5** Table showing the average answer for each of the experiment groups at the end of the 'check' phase (week 6)

| Group                     | Question                       |     |     |     |     |     |     |     |  |     |     |     |     |     |     |     |     |   |  |  |
|---------------------------|--------------------------------|-----|-----|-----|-----|-----|-----|-----|--|-----|-----|-----|-----|-----|-----|-----|-----|---|--|--|
|                           | Questions relating to measures |     |     |     |     |     |     |     | Questions relating to the role of a leader |     |     |     |     |     |     |     |     | Questions relating to management of change and capability |  |  |
|                           | 1                              | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9  | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  |   |  |  |
| Pilot group—core team     | 3.7                            | 4.0 | 3.7 | 2.7 | 2.0 | 2.6 | 2.3 | 2.4 | 4.0  | 3.6 | 4.4 | 3.6 | 4.3 | 3.9 | 3.6 | 3.9 | 3.3 |   |  |  |
| Pilot group—non core team | 4.2                            | 4.0 | 4.2 | 3.7 | 2.7 | 3.0 | 2.8 | 3.2 | 3.8  | 4.2 | 4.2 | 3.3 | 4.2 | 2.7 | 4.2 | 4.0 | 2.7 |   |  |  |
| Control group             | 4.2                            | 4.2 | 4.3 | 3.5 | 3.3 | 3.8 | 3.3 | 3.8 | 4.3  | 4.2 | 4.2 | 3.7 | 4.2 | 3.2 | 4.0 | 4.0 | 2.8 |   |  |  |
| Grand total               | 4.0                            | 4.1 | 4.1 | 3.3 | 2.6 | 3.1 | 2.8 | 3.1 | 4.1  | 3.9 | 4.3 | 3.5 | 4.2 | 3.3 | 3.9 | 3.9 | 2.9 |   |  |  |



**Fig. 20** Honey and Mumford's learning styles. Adapted from Honey and Mumford (2000)

Despite the core team showing signs of their current thinking changing, or at least being challenged, this research has found that the hypothesis has not been statistically proven for any of the aspects above.

A big factor in this is the variation in answers given by the group. This suggests that the intervention is having a bigger impact on some members of the group than others in terms of challenging their thinking, and as such their thinking has changed more quickly.

The fact that the changes in thinking are potentially happening more quickly in some members of the core team could be a reflection on their individual learning style. During the intervention, the core team's learning styles were assessed using Peter Honey and Alan Mumford's model. This model identifies four styles, for which any individual will have a natural preference. The four styles are described in Fig. 20.

The core team is made up predominantly of Activists and Reflectors. Perhaps unsurprisingly, it is the activists who have made the quickest and also the biggest shift from command and control thinking to systems thinking. There has been some movement amongst the reflectors, but nothing like a pronounced as the activists.

This observation would also suggest that, given time, the reflectors do still have the potential to move their thinking from command and control thinking to systems thinking. It is likely therefore, that the six weeks over which the experiment was measured, was not sufficient enough a time for the reflectors in the group to have made the shift.

This suggests that the changes in thinking happen over a much longer time period than could have been detected in the short duration of this experiment. This could be an issue in an organisation that demands immediate results.



### 5.3 System Conditions and Levels of Engagement

In retrospect, research question 2 is perhaps the wrong question to ask, as the answer is not as straightforward as just looking up the hierarchy, although the senior level engagement and understanding has certainly had a significant bearing on the intervention in which the researcher has been involved. The answer to this question must also be understood in the context of the system conditions impacting on the business and programme, which are described in Sect. 5.3.1. As such, it makes sense to answer question 3 first before attempting to answer question 2.

#### 5.3.1 What Are the Main Current System Conditions and Thinking Preventing Systems Thinking?

The researcher has identified the first key system condition, that could prevent the programme being successful, to be:

**Key system condition #1: *Multiple purposes exist across the organisation, which are currently conflicting with each other.***

In the part of the organisation where this research took place there are different groups representing different parties competing for the role of the customer. These are the user of the service and shareholders, who have different purposes.

If these different *world-views* are not addressed and reconciled, it may well derail the programme. To date, it has been extremely difficult to even get the right stakeholders in the room to even begin working through these issues. This is especially important given that the power over the design and measurement of the work sits in a separate part of the organisation, with a completely different management hierarchy, to the operation in which this intervention is taking place, as was the case in this research.

Conversations with senior operations managers and observations throughout the intervention, have led the researcher to identify the second key system condition to be:

**Key system condition #2: *The current measures and performance management system are anchoring the organisation in Command and Control thinking.***

The measures for the part of the organisation in which the research took place are defined and monitored by a different part of the business, separate from the operation. The measures typically take the form of weekly and monthly service level agreements (SLAs). If the SLAs are breached, an immediate notification is sent to the top of the hierarchy in Operations. This absorbs a huge amount of time, as much as a whole week at a time on the intervention has been lost to this type of activity, and it happens continually.

Critically, performance against the business measures is linked through into the performance measures in each individual's balanced scorecard, from the

director down to the frontline staff. This makes a direct link between achieving targets relating the performance of the business and remuneration. If an individual achieves anything lower than a 'good performer', they will not be eligible for an end of year bonus.

### 5.3.2 At What Level Does Systems Thinking Need to be Understood?

In the part of the business in which this research took place, there has been a distinct lack of engagement by the Director of the operation in both elements of the Service Excellence programme. This has caused significant problems for the intervention, some of which are related to and have exacerbated the issues caused by the system conditions described in Sect. 5.3.1. It is not exactly clear to the researcher as to why there has been such a lack of engagement, but the consequences have been quite apparent.

According to the design of the intervention, the Director is supposed to be heavily involved in the top-down end-to-end redesign. This has not happened, meaning that the redesign has lost momentum and is now out of sync, with the bottom up element of the programme.

The lack of engagement cannot be explained by a lack of support in the hierarchy above the Director either, as the overall Director of Operations is sponsoring the programme and is a strong advocate. Having said that, the organisation does believe they are getting mixed messages from this person, particularly relating to the existing measures and achieving the current targets. On the one hand they are told that the existing measures/targets are not fit for purpose, but are still called into regular crises meetings when they are not achieved, which apparently comes from the overall Director of Operations.

As discussed in Sect. 5.3.1, relating to the second system condition regarding measures, if the performance against the dashboard is in the senior managers individual measures, then it stands to reason that it would also be in the Directors scorecard also, putting them under significant pressure to achieve the targets as well, especially given that it is linked to monetary reward. This begs the question as to whether it is right to expect a strong commitment a programme if it will potentially impact individuals financially?

Also highlighted in Sect. 5.3.1 is the fact that the operation is not in control over how they are measured. The measures are set and monitored by a separate part of the business, out of control even of the overall Director of Operations. Therefore, regardless of the level at which the support exists within the Operations hierarchy, support will be needed in this other part of the business, arguably at the same level as the overall Director of Operations, if the programme is to be successful in the operation in which this research took place.

## 6 Conclusions

When using a Systems approach, the issue of where the boundary of the system being studied will need to be established. Inevitably, with an approach that is putting the customer (service user) at its centre, the system boundaries in a large and complex organisation will cross over existing organisational silos and impact on the numerous support and control functions. As was found in the area in which this research took place, it cannot be assumed that each of these silos and support/control functions has a shared and aligned purpose.

Referring back to Fig. 7 in the literature review, the approach, by combining the Vanguard Method with the frontline capability development, has arguably created a combined approach that is both Type A, *Improving goal seeking and viability*, and Type C, *Ensuring fairness*. However, because of the limitations of the Vanguard Method identified by Jackson et al. (2008), the researcher believes the approach may have a gap relating to Type B, *Exploring purposes*, as the Organisation certainly has multiple parties who are competing for the role of customer, for instance the Service User and Shareholders. What is in the interests of one of these parties may not be in the interests of the other.

An unintended consequence of the programme has been the difficulty presented to the senior leaders in terms of finding a balance between maintaining the current levels of service against existing measures, and the time they are able to commit to the programme. It is the view of the researcher that the current business measures and performance management framework is anchoring the organisation in the command and control thinking. Those involved must be ensured that their involvement in the programme will not be detrimental to them in any way, and should be given the backing and support to challenge the current system, including the way in which they are currently measured.

An interim solution, for any individuals involved in the programme, would be to immediately disconnect their individual scorecards from the performance of the business. However, the researcher believes that longer-term solution is required relating to how the organisation measures its people will be required, as the current performance management framework focussed on the individual, does not support a Systems Thinking environment.

The researcher also strongly believes that further research is required into the impact of performance management of individuals in organisations, especially given that several high profile companies, including Microsoft, have ditched their performance management frameworks. Of particular interest is building on the observations in this research around how the wrong measures can anchor an organisation in its old way of thinking, making it incredibly difficult to make any changes, let alone make any long term change in the culture. It would be fascinating to see if culture change happened more quickly if better measures can replace the old command and control measures at the outset.

Based on the data collected, the critical success factors relating to a Systems Thinking intervention can be summarised as follows:

- Ensure the organisation is ready, particularly in terms of senior engagement. Timing is critical; so do not start if the organisation is not ready.
- Ensure there is an understanding of the organisations work and its structures by the interventionist prior to starting.
- Allow the design of the programme to remain flexible to be able to adapt to the situations and contexts encountered in such a complex organisation. This may mean reconciling multiple purposes.
- Interventionists must be aware of how to adapt the approach, and appreciate that one size does not fit all.
- Protect those involved in the intervention from any negative consequences and work with them to free up their time to stay involved.

Given the drag that existing measures place on an organisation, it is likely that a big change in thinking could be made if the organisation could be freed from their constraints early in the intervention. To do this would require significant support from the top, in order to engage and involve the various interested parties, to come to an agreement prior to the intervention starting.

The researcher further believes that these findings, particularly relating to the measurement systems would be applicable in most organisations and industries, but are likely to vary depending on the context in which they have been implemented in that organisation. As such, these systems must be considered and studied as part of any transformation programme. Not doing so risks the sustainability of the programme, especially if the measurement systems are not changed to align with the new ways of work, and more importantly *thinking*.

Finally, a word about *paradigm incommensurability* that, according to the literature, is considered to be the major constraint to combining systems approaches. Both in terms of the approaches themselves and for the practitioner attempting to operate in multiple paradigms. In practice, the researcher did not come across any issues relating to this during this research project, suggesting that perhaps these concerns are overstated. If anything, having an approach to the intervention that covered both functionalist and emancipatory concerns greatly enhanced the intervention.

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