



Evaluating systems thinking in housing

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This paper describes and evaluates work carried out in the social housing context in the United Kingdom using a systems thinking approach called 'lean systems' (LS). The work, sponsored by the Office of the Deputy Prime Minister, was designed to test whether LS could improve the efficiency of delivery of housing management and maintenance services. A pilot programme was developed in which three housing organizations used the approach in different service areas. The results indicate that LS can yield efficiency gains and improvements in service performance, customer satisfaction and staff morale—although securing and sustaining these results requires considerable organizational commitment. The LS approach is outlined, work in the pilots described and the results presented. A theoretical analysis seeks to locate LS in the spectrum of systems methodologies and to delimit its particular area of competence.

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Introduction

The drive for efficiency and continuous improvement in public sector service delivery is a recurrent theme in initiatives taken by the present UK government. Of particular relevance to this study is the review headed by Sir Peter Gershon (and informally known as the Gershon Review (2004)) which started its work in August 2003. The review examined the scope for public sector efficiencies with particular reference to the possibility of getting more or better quality output from the same resources.

Social housing organizations provide services to over four million households and so inevitably attracted the attention of the Gershon Review. As a result, the social housing sector was expected to achieve efficiency gains of £835 million a year by 2007–2008. Of this amount it was estimated that £280 million could come from the delivery of housing management and maintenance services—the main area of activity addressed here.

The Northern Housing Consortium (NHC) had been interested in the use of systems thinking to improve housing services for a number of years. In particular, it had witnessed the improvements achieved by members employing Vanguard Consulting's 'lean systems' (LS) approach. In January 2004, the NHC hosted a 3-day LS awareness session, supported by Vanguard Consulting, and attended by representatives from the Office of the Deputy Prime Minister (ODPM), the Audit Commission and social housing organizations from across

the North of England. Expressions of interest for involvement in a pilot were sought and members of the ODPM and NHC selected three pilot sites. The aim was to provide analysis across as wide a range of organizations and services as possible, covering work representative of the bulk of the mainstream business of housing landlords, and offering the most potential impact on resource use and customer service.

The organizations selected were Tees Valley Housing Group, Leeds South East Homes, and Preston City Council. Tees Valley operates from a single site in Middlesbrough and is a traditional regional housing association managing almost 4000 homes. Its performance was very good but it believed there was still room for improvement in its responsive repairs service. Leeds South East Homes is an 'Arms Length Management Organisation' (ALMO) with delegated responsibility, from Leeds City Council, for providing housing management and maintenance services for approximately 7600 homes. Its performance was improving from a low base but there remained significant problems, according to the most recent Audit Commission inspection report, with the time taken to repair properties that had become vacant (voids) and in re-letting of those properties. Preston City Council was, at the beginning of the research, a stock owning local authority with a Housing Department managing around 6700 properties. Despite some recent improvement, major concerns persisted about service delivery. An obvious service area to review was rent collection and debt recovery where Best Value Performance Indicators remained in the lower quartile.

The ODPM commissioned the NHC to undertake a project to evaluate LS and work started on the pilots during 2004, continuing in 2005. The overall project was managed by Ian Wright of the NHC. In each pilot site an in-house 'systems

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team' was established to work with the Vanguard consultants. At the same time, the ODPM selected an Evaluation Panel to monitor the interventions and to evaluate success. This panel was made up of key stakeholders and an academic advisor. During the summer of 2005 a report, outlining the findings, was prepared for the ODPM by the NHC, based on advice from the Evaluation Panel. This report, 'A Systematic Approach to Service Improvement: Evaluating Systems Thinking in Housing', was published by the ODPM in September 2005 (ODPM, 2005). This report, of course, was written for the ODPM not by them and as such does not represent Government Policy). The report and its findings were launched on 22nd September in London and 26 September in Leeds, with speakers including Dawn Eastmead (ODPM), Roy Irwin (Audit Commission) and representatives from each of the three pilots. A follow-up report, evaluating the sustainability of the initial improvements, was published by the NHC, in October 2006, and titled 'A Systematic Approach to Service Improvement—an update' (NHC, 2006).

The authors of this paper were involved in the project as leader of Vanguard Consulting (Seddon); Principal Officer—Performance Improvement, NHC, and seconded on to one of the in-house teams (Johnston); and academic advisor on the Evaluation Panel (Jackson). Our purpose is to demonstrate to management science academics and practitioners the value of the LS approach for improving service delivery and to delineate those circumstances in which such an approach is likely to be successful. To that end the body of the paper is divided into three sections. The first summarizes the LS approach used in the project. The second outlines what happened in the pilots, commenting on both successful outcomes and difficulties encountered. The third seeks to evaluate the results of the interventions and the usefulness of the LS approach itself. Those readers requiring a detailed account of the LS methodology, of the three pilot projects, and/or of the means employed here to evaluate systems methodologies, are referred elsewhere—to Seddon (2003), the ODPM (2005) and NHC (2006) reports, and Jackson (2003), respectively.

The LS approach

Vanguard's LS approach is said (Seddon, 2003) to provide:

'a method for ... achieving the ideals many managers aspire to : a learning, improving, innovative, adaptive and energised organization. It provides the means to develop a customer-driven adaptive organization; an organization that behaves and learns according to what matters to customers'.

It was developed by John Seddon, originally an occupational psychologist, who had become interested in change programmes and why they often failed (see Vanguard website). LS incorporates aspects of intervention theory and systems thinking (the work of Deming (1982) and Senge (1990) being particularly influential), together with lessons

from Toyota's 'lean manufacturing' adapted for service organizations. We shall consider the LS approach in terms of its philosophy and theory, its methodology, and its principal methods. This is the same structure used by Jackson (2003) to review other well-known systems methodologies, such as system dynamics and soft systems methodology.

Philosophy and theory

LS is based upon the systems principle that operations or organizations should be viewed as 'wholes' serving a purpose. In Vanguard's case the purpose of a system is always seen in terms of its customer—'what matters is what matters to the customer'. Once the customer's purpose has been established, attention can be given to how the parts or tasks must be fitted together in order to best achieve that purpose. Here, in line with systems thinking, it is the interactions between the parts that are viewed as being critical.

LS insists that a customer focus remains central throughout an intervention. The design of support systems, such as IT systems, should follow design of the primary customer serving system. Evaluation must be in terms of overall system performance in pursuit of customer purposes. Inappropriate targets can distort the behaviour of the system in ways that are not beneficial to its customer's purposes.

Another systems principle honoured in LS is that of 'requisite variety'—the need for a system to match the variety thrown at it by its environment (see Ashby, 1956). Variety of demand is monitored and modelled thus reducing the variety of the environment by making it more predictable. To achieve a variety balance, it is also essential to increase the capacity of the system itself to handle uncertainty. This is done by increasing learning in the system. LS is opposed to mechanistic thinking and the use of 'command and control' management practice which drives out creativity and the ability of the system to respond to its environment.

A second key, and interrelated, influence on LS has been Taiichi Ohno's approach to the design and management of work, as operationalized at Toyota (Ohno, 1988; Liker, 2003). Ohno's conception of 'lean manufacturing' turned on its head the 'make and sell' philosophy dominant in the United States and Europe. In Toyota the work is based on customer demand. This 'demand pull' approach means that something is only made when it is needed, creating a huge saving on inventory. When it is needed, it is essential that all the right resources are at the right place in the production process at the right time. At Toyota, the notion of 'Just in Time' describes how material is processed and moved in order to arrive just in time for the next operation.

It is clear that the success of lean manufacturing rests upon achieving economies of flow through the whole system, from end to end. In LS the aim is to 'clean-stream' the work removing those activities that contribute nothing to the purposes of the customer and redesigning the system around the most vital tasks necessary in terms of the purposes.

Table 1 Description of ‘check’, ‘plan’, ‘do’

<i>Stages in process</i>	<i>What is it?</i>	<i>What does it do?</i>
‘Check’	An analysis of the what and why of the current system	Provides a sound understanding of the system as it is and identifies waste and the causes of waste. ‘Check’ asks: <ul style="list-style-type: none"> • What, in reality, is the purpose of this system? • What is the nature of customer demand? • What is the system achieving? • How does the work flow? • What is value work and what is waste? • Why does the system behave like this?
‘Plan’	Exploration of potential solutions to eliminate waste	Provides a framework to establish what the purpose of the system should be and how the flow of work can be improved to meet it. ‘Plan’ asks: <ul style="list-style-type: none"> • What is the purpose of the system from the customer’s perspective? • What needs to change to improve performance against purpose? • What measures are necessary in order to gauge improvement?
‘Do’	Implementation of solutions incrementally and by experiment	Allows for the testing and gradual introduction of changes whilst still considering further improvement. <ul style="list-style-type: none"> • Develop redesigns with those doing the work. • Experiment gradually. • Continue to review changes. • Work with managers on their changing role.

To ensure continuous improvement of the flow of work, Ohno was convinced that those who were doing the job had to have the responsibility to act. Variety could be built into the system by making intelligent use of intelligent people. He wanted workers to be ‘constructively unreasonable’, questioning the way the work is done and looking for better ways. The role of managers was to allow people freedom and support them in implementing change.

These highly compatible ideas from systems thinking and lean manufacturing, adapted for service organizations, are combined in LS with Seddon’s own take on intervention theory. Because systems ideas are often counterintuitive, it is argued, their force is best demonstrated in practice. The preference, therefore, is for the consultants to work with an in-house ‘systems team’ selected to learn the approach by carrying it out. The systems team should be small and should have a bias toward those directly familiar with the work flow. Members should, additionally, be willing to challenge the *status quo*, be respected in and beyond their own work position, and be committed to service and quality. In Tees Valley the systems team consisted of a Maintenance Manager, a Customer Services Advisor, a Customer Services Centre Manager, and a representative from the NHC. The systems team is supported throughout by an ‘organizational sponsor’ who acts as a project manager. This person should be of sufficient seniority to clear any obstacles the team encounters.

LS encourages those who work in the system to diagnose its faults and to lead the redesign process in order that their learning and self-development are promoted. Managers ‘walk the work’ and are themselves, therefore, exposed to the system’s failings and the improvements that can stem from redesign. Both those directly involved in the work and their managers should come to recognize the limitations of command and control thinking and make the leap to systems thinking by seeing its value in practice rather than just through theory. The system becomes a ‘learning organization’ capable of responding to changes in its environment.

Methodology

The ideas enunciated above are translated into action by a three stage LS methodology: *check–plan–do*. This is an adaptation of Deming’s (Deming and Walton, 1992) ‘plan–do–check–act’ cycle, made because Seddon believes managers need to be confronted starkly with the failings of the current system and the limitations of their own ways of thinking, through ‘check’, before they become willing to embrace alternatives. A summary is provided in Table 1.

‘Check’ is an analysis of the what and why of current system performance in terms of the customer’s perspective. The systems team begins by trying to discover the purpose the system actually serves now, in reality. Often this will

bear little relation to customer purposes being more influenced, for example, by regulatory targets. The next step is to establish the type and frequency of customer demand on the system. It is important to distinguish between 'value demand' and 'failure demand'. In the case of repairs to properties, value demand will consist of people making first-time calls requesting repairs. Failure demand will be calls caused by a failure to do something or to do it right for the customer—for instance, tenants progress-chasing their repair or complaining that the repair has not been completed to their satisfaction. High levels of failure demand indicate something is seriously wrong with the system and further clog it up. For types of demand that frequently occur, the systems team will now assess how the system currently responds; looking at average response times and the system's overall 'capability to respond', based on upper and lower limits. The data are captured on a 'capability chart'—one of the major tools employed in LS, and described in the next subsection.

Once the systems team understands demand and the system's response capability, it can start to map how the work flows through the system. It is vital that the mapping maps the actual work and the team, therefore, follows the flow of tasks as they are carried out. Discussions then centre on issues that stop the work flowing smoothly and the causes of delay and frustrations experienced by the workers and customers. The systems team produces flow charts of the work that are validated with those involved.

The next step is to distinguish 'value work', activity required to deliver what matters to the customer, from 'waste'. Waste takes three forms in LS. Some waste can be eliminated immediately as it serves no purpose. Other waste may take some time to get rid of because it has been designed into the work. A final type of waste can be difficult to remove because though it may be of no direct value to this system it is wanted by another system.

The final stage in 'check' involves trying to document why the system behaves as it does. A 'systems picture' and a 'logic picture' (both described later) are constructed on the basis of the observations of the work flow made by the team and discussions with staff, managers and customers. The results of 'check' can now be presented to the organizational sponsor and other stakeholders, such as senior managers, boards, councillors and customers. If permission to proceed is obtained, the redesign phase of 'plan' and 'do' can commence. 'Plan' is concerned with establishing the framework to remove waste; 'do' is about redesigning the system to eliminate or reduce waste wherever possible.

The first step in 'plan' is to rethink the purpose of the system from the customer's perspective. The next step is to establish principles for redesign which will enable the system to achieve its new purpose, such as 'design against demand', 'only do value work', 'pull on expertise as needed', 'IT should support the work'. The final step requires performance measures to be established which reflect the revised purpose, are relevant to improving the system, and

are useable both by the people doing the work and their managers.

'Plan' is undertaken primarily by the systems team working with the organizational sponsor and consultants. Once the 'do' stage is entered, however, front-line staff and customers again become central to success. 'Do' begins with possible redesigns being discussed with those doing the work. Changes are introduced incrementally, working closely with the people operating in new ways and taking careful account of direct customer feedback. Redesign is, therefore, a much slower process than 'check'; the ethos being 'do it right rather than do it quick'. A final important element is to help managers think differently. Special sessions may be necessary to help them abandon a command and control philosophy, think in a systems way, and adopt a role supporting the staff carrying out the work.

We should end this discussion on LS methodology by emphasising that 'check', 'plan' and 'do' constitute a never-ending cycle designed to promote continuous improvement.

Methods

LS has a number of methods at its disposal to assist the methodology just described. Chief among these are 'demand analysis', 'capability charts', 'flow charts', 'systems pictures' and 'logic pictures'.

Demand analysis is employed to identify type and frequency of demand and to distinguish between value and failure demand. The amount of failure demand is often shocking both for staff and managers, and can help galvanize a determination to change. An example of demand analysis, from the Tees Valley pilot, is provided in the next section.

Capability charts show how well the system responds to customer demands in customer terms. Figure 1 is an example, comparing relet times for voids in the pilot areas of Garforth and Osmanthorpe, in Leeds South East, before work started with relet times during the redesign experiment. A dramatic reduction in the mean is evident. The chart also projects the likely maximum and minimum relet times—the upper control limit and the lower control limit. There is a 'Vanguard Guide to Creating and Using Capability Charts' www.lean-service.com.

Flow charts show how the work flows through the system. They can be produced at 'keystroke' level, where every small step is included and charted, or in a more summarized form in which minor tasks are grouped together. They are employed to distinguish value work from waste.

Systems pictures demonstrate how potentially simple flows become distorted and complicated by internal constraints and controls, and external influences. They allow the causes of waste to be identified and classified. Logic pictures capture the manner in which the dominant mode of thinking in an organization influences system design and can contribute to it not serving its customers. There are examples in the ODPM report (2005).

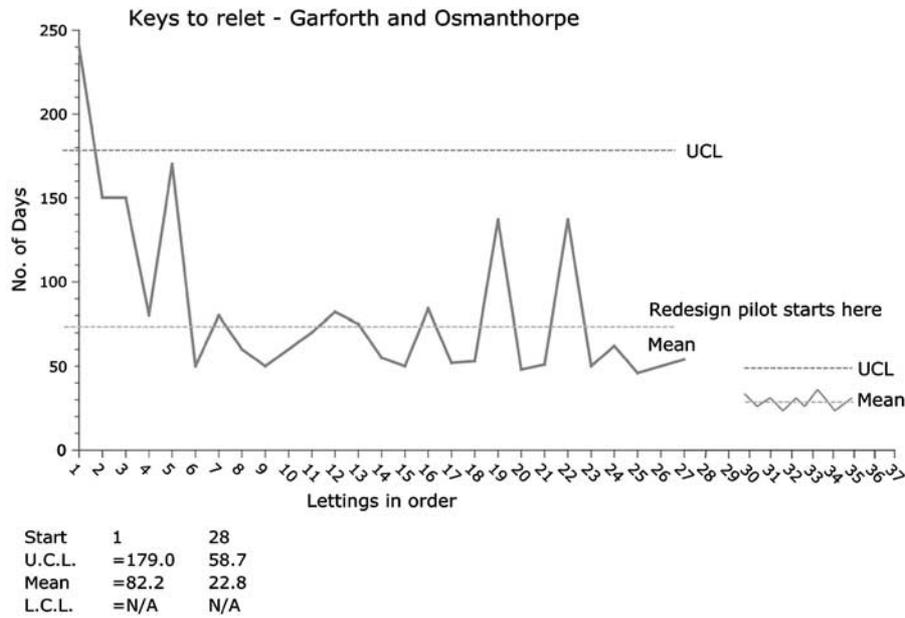


Figure 1 Relet times for voids, Garforth and Osmanthorpe.

LS in action

This section describes the use of the LS approach at the three pilot sites of Tees Valley, Leeds South East and Preston City Council. It aims to illustrate the methodology and methods in action, taking examples from each pilot, rather than to offer a detailed account of what happened in each case. More information can be found in the ODPM (2005) and NHC (2006) reports. The ODPM report is fully downloadable from the web.

Check

In every case the current purpose of the system was found to reflect adherence to targets rather than pursuit of customer purpose. In Tees Valley, it was:

‘To do repairs within the target time set and maximise use of the in-house team’.

In Leeds South East, it was:

‘To relet empty properties in line with the Lettings Standard’

and

‘To repair the house to Lettings Standard within 28 days’.

In Preston it was:

‘To meet ICPIs in respect of rent arrears, that is to reduce current rent arrears as a percentage of the debit’.

The next step is to discover the nature of customer demand. At Tees Valley and Preston this information was collected

by closely observing the work of call centre and reception staff. Tees Valley wanted to be involved in the pilot because of a concern they had about customer satisfaction with their responsive repairs service. The suspicion that all was not well was borne out in the demand analysis which revealed 45% of the calls received as generated by failure demand. Table 2 illustrates this.

Once demand is understood it becomes possible to assess the system’s capability on, for example, relet time for voids. Figure 1 shows a chart used in Leeds South East.

It was now necessary to track how the work flowed through the system and to distinguish value work from waste. Systems team members literally followed the work step by step and covered all areas that the work ‘touched’, both within the organization and outside it. As an illustration, this involved working with maintenance staff and contractors (Tees Valley—repairs), speaking with tenants and staff at the Post Office (Preston—rents), and the homelessness team (Leeds—voids). In discussing ‘waste’, it was necessary to convince staff that they were not doing themselves out of a job and that gains in efficiency would be used to provide better services. Once the flow charts were completed they were validated with those involved. In each of the pilots the flow charts demonstrated that value work was minimal and that there were significant areas of waste. In Tees Valley, flow charts were produced for each stage of the process from ‘repair reporting’ to ‘invoicing’. Of the 285 steps documented only six could be said to represent value work; the rest being ‘waste’ from the customer’s point of view.

Some of the waste encountered was of the kind that could be easily eliminated. Maintenance assistants at Tees Valley completed a timesheet (taking 20 min a day) which was not

Table 2 Value/failure demand at Tees Valley

<i>Nature of call</i>	<i>% of total</i>	<i>Summary</i>
Can I report/can you fix	49	55% value
Can I tell/give you information	3	
Can you confirm/can I check	3	
I'm still waiting for .../when will you be coming	17	45% failure
Someone has been out to fix and it's still not working	9	
Someone has been out but it's not finished/completed	9	
Can you give me more information	4	
I was out when you came	3	
Others	3	

used for any meaningful purpose. This was scrapped. A situation had evolved at Leeds where people, in order to remain on the homeless register, had to make three bids per week on the properties available under the Choice Based Lettings Scheme. The effect was that people bid for properties they did not want in order to continue to be considered homeless. This requirement was scrapped by agreement with Leeds City Council. Much of the waste, however, was firmly designed into the system and would take some effort to design out again. At Preston the Housing Department relied on a council-wide IT system which would have to be changed before any new finance system could be implemented. In Tees Valley procedures existed whereby the diagnosis and time allocated to a repairs job were determined by staff in the customer services centre and operatives' diaries allocated into 1 h time slots. If a job could not be done owing to lack of time, materials or access, the job was passed back for rebook. This process involved cancelling the previous job, entering a new one and starting the whole process again.

The third type of 'waste' recognized in LS is that generated by another system. Some of this is fair enough since it clearly has value to that other system and indirect value to customers if, for example, it reduces the prospects of fraud and misuse of resources. In other cases, however, it seemed to be related to targets which bore no relation to customer service. In Tees Valley, for example, a target to respond to requests for repairs within 10 days meant that a tenant going on holiday would not be booked in but told to ring back again when they returned.

The final stage of 'check' is to use a systems picture and logic picture to try to ascertain why the system behaves the way it does. The logic picture at Preston indicated management thinking dominated by targets and performance indicators.

In general, the systems team members enjoyed doing 'check'. A Preston team member remarked:

'We presented our findings and our directorate was astounded. All our hard work was worthwhile and we were over the moon to be told that we will be going ahead with the "redesign" phase...'

It also assisted their self-development. They examined areas of work in which they had not previously been involved and grew the confidence to deliver presentations to senior staff.

One of the noticeable features of 'check' is the speed with which it can be accomplished. With the systems teams working on the pilots for 3 days a week in Tees Valley and Preston, and full-time in Leeds, the time from set-up to analysis of the organization's thinking was approximately 6 weeks. This speed led to impatience for change and, in Preston, some disillusionment later when the IT system caused delays in implementation. All the presentations went well and agreement was obtained to proceed to the redesign stages.

Plan

In Tees Valley the revised purpose, bringing it in line with the customer's purpose, became:

'To do the repair right, first time and achieve what matters to the customer'.

In Leeds South East, it became:

'To repair and relet homes and create sustainable communities'.

In Preston, it became:

'Right amount, right time so customer knows what to pay, when to pay and how to pay it.'

Rethinking the purpose is important work in its own right, as well as being the basis for enacting change and measuring performance. It allowed the Preston team, for example, to recognize how the previous system had been 'setting up customers to fail'; the new purpose concentrated minds on ensuring they succeeded.

The principles of redesign, established to guide future change, turned out to be remarkably similar in all three pilots. This is hardly surprising. The consultants clearly had a strong influence and these principles derive directly from the systems and lean ideas they embrace.

Measures are then established to evaluate performance against the revised purpose. In the case of Tees Valley, the measures introduced were:

- measurement of true end-to-end time for the whole repair;
- number of repairs completed right and first time;
- customer satisfaction;
- reduction in failure demand.

Do

‘Do’ begins when suggestions for redesign are considered in consultation with those carrying out the work. Using the flow charts it is relatively straightforward to distinguish between value work and waste.

At Tees Valley the team recognized that considerable savings could be made by giving more responsibility to the in-house maintenance assistants and the contractors. In the redesign, the customer services centre takes brief details of the repair and contact details for the tenant. This information is sent via e-mail to the operative’s hand-held unit or the contractors. Ownership then passes to them until the job is fully completed. This includes arranging an appointment with the tenant and obtaining all necessary materials. In Leeds South East the proposed redesign halved the number of steps involved in letting a property from 64 to 32. The creation of a dedicated Lettings Support Team, to deal with all voids management and allocations, allowed many duplicated practices at area offices and protracted hand-offs between the area and the contractor to be removed. A close working relationship developed between the dedicated team and the partnering repairs contractor. In Preston it was clear that if customers were to be set up to succeed they needed more information and proper communication had to be established between the allocations, arrears and Housing Benefit teams. Prospective tenants should be told at the point of sign up what, when and how to pay their rent. The tenancy start date should be agreed and, where applicable, a Housing Benefit claim form completed. If it could not be established how the rent would be paid, the organization refused to sign the tenant to the property.

The instruction in redesign is to experiment incrementally, and to discuss issues arising with those doing the work and the customers. The systems teams at Leeds and Preston agreed with their senior managements to pilot redesign geographically, in two housing areas, before rollout to the whole organization. At Tees Valley, initially, only one maintenance assistant kept his own diary and arranged his own work. Once any teething problems were sorted out, this procedure was taken up by a second and this continued until all were working to the new system.

The next step in ‘do’ is to continuously review the changes made. At Tees Valley, a capability chart revealed end-to-end repair times decreasing from an average of 46 days to 5.9 days under the new way of working. The up-date study

(NHC, 2006) showed them remaining at this low level. Customer satisfaction, evaluated using follow-up phone calls, also improved with 75% scoring the service 10/10. And failure demand decreased from 45 to 23%. In Leeds a capability chart showed average void relet time reducing from an average of over 50 days to around 25 days during the period of testing, increasing again to 34 days after all six offices went live. The number of empty properties and amount of consequent rent lost continues to fall. In August 2004, when the work started, the number of empty properties was 240. Since April 2005, voids have averaged 144 and in February 2006 stood at a new low of 118 empty properties. In Preston, in one remarkable pilot, the time for the first payment to hit the account reduced from an average of 34 days to an average of 3 days. As the redesign was extended to all offices, however, performance levelled off, with payments reaching the account within 20 days on average. The predictability achieved, as represented on the capability chart, was still in the words of one Preston team member ‘a Himalayas to Holland phenomenon’. Further, a study of 360 new tenancies, with 180 starting before the redesign work and 180 post redesign, showed that only 18% of new tenants had fallen into arrears post redesign, compared to 43% previously. The work had a negative impact, however, on relet times in Preston, which rose on average from 32 to 40 days. Ensuring that tenants ‘succeeded’ was taken too literally in some cases, with tenants able to delay their start date by up to 6 weeks after receiving the offer.

The final stage of ‘do’ involves working with managers on their changing role. Throughout the interventions they were encouraged to become engaged, but few became directly involved. More general sessions proved difficult to arrange.

Systems team members continued to enjoy working on the projects during redesign. In Tees Valley and Preston, however, tension increased between working on the project and doing the ‘day job’. In Leeds, where the day job essentially became working as the Lettings Team created by the project, the problem dissolved. Other staff and front-line workers who became engaged in redesign were also enthusiastic, with maintenance assistants at Tees Valley talking of ‘getting my brain back’ and ‘getting into the rhythm of the new way of working’. Other staff not directly involved had mixed reactions. The full-time secondment of the team in Leeds lent an air of ‘exclusivity’ to their work. In the new system the team assumed full responsibility for the allocation of properties. Area managers and housing officers, who had previously been involved, thought that this would create future problems as they were not meeting tenants before the tenancy began. Tenants were losing the benefit of the area staff’s local knowledge which, it was argued, was important in sustaining tenancies. The system was modified giving area offices 2 weeks to select from the shortlist—this added, on average, 2 days to the relet time. In Preston, where the redesign eventually touched on four of the council’s five directorates, there were instances of progress being

hampered, making the sponsor's job very challenging. There were concerns, despite the assurances given, that by identifying and removing waste staff were designing themselves out of a job. Others grew disillusioned as improvements they thought that they had identified did not come to fruition. The employees' concerns and disillusionment led to a fragmented approach to implementation.

It is clear that the attitudes and expectations of staff not directly involved need to be carefully managed. The same is true of more senior managers. There were occasions where investigation of long-standing systems was treated with suspicion. The senior management at Preston became concerned that the work focussed on rent arrears in isolation and did not pay due regard to other service areas affected, in particular the management of voids. In Tees Valley and Leeds South East, however, senior managers have been happy with the results, have supported the work, and have championed the cause of systems thinking in their boards and committees.

Evaluating LS in housing

The Vanguard LS approach ensures that, in its own terms, the systems it redesigns become self-evaluating. Obviously, however, the ODPM wanted an external evaluation of the success of the project and established its own Evaluation Panel. This consisted of representatives from the ODPM, the Audit Commission, other housing bodies and an academic advisor (Jackson). In what follows the findings of the Panel, as reported in the ODPM report (2005), are used as the basis for an evaluation of the success of LS. These findings are supplemented by the follow-up work carried out by the NHC (2006).

Another type of evaluation is also conducted, giving consideration to how generalizable the experiences from this intervention might be to other projects involving service delivery in the public sector. This inquiry demands an overview of the strengths and weaknesses of LS and is carried out using one of the theoretical devices that is part of 'critical systems thinking' (CST) (Jackson, 2000, 2003).

LS in this project

The ODPM was primarily interested in the ability of LS to achieve efficiency gains that could contribute to the expectations of the Gershon review. The Evaluation Panel also concerned itself, however, with less quantifiable matters such as the impact of the pilots on the staff involved, other staff affected and on more senior managers. In forming its judgements, the panel received interim reports and presentations from the NHC and pilot organizations throughout the period of the research. Individual panel members also visited the pilot sites.

The Evaluation Panel came to the conclusion that LS has the capacity to deliver significant efficiencies in service delivery. All the pilot organizations demonstrated potential annual six-figure gains from removing waste and redeploying

resources more effectively. In Table 3 each system change is considered and monitored in terms of efficiency. The potential gains are also split between cash savings (e.g., reduced void loss bringing more rent into the organization) and efficiencies allowing for improved service (e.g. removal of timesheets allowing maintenance staff to spend more time maintaining properties). A more detailed analysis, including how the cost savings were calculated, is provided in the ODPM report (2005).

The follow-up report (NHC, 2006) reveals that two of the pilot organizations (Tees Valley and Leeds South East) are succeeding in realizing most of the gains predicted. At Tees Valley the main anticipated areas of gain were reduced processing time and an increase in work done in-house. The reduction in works orders in 2005/06 was 3500 per annum rather than 7000 which, at £10 per works order, meant a gain of £35 000 rather than £70 000. On the other hand, 2200 fewer jobs were passed to contractors than in the previous year, yielding an efficiency gain (at £37 per repair) of over £80 000—£10 000 more than predicted.

At Leeds South East the predicted efficiency gains from reducing relet time in the original report were £95 000, based on a 4-week reduction in relet times. As the figures show only a 3-week reduction, the efficiency arising is now calculated at £71 000. However, as we saw, the number of empty properties and amount of consequent rent lost continues to fall. This equates to a reduction in rent lost of over £360 000 since the work started.

In Preston the fragmented nature of implementation, the failure to spread the intervention to the arrears built up by existing tenants (because of problems with the IT system), and the matter of the unanticipated impact of the new system on relet times, makes it impossible to accurately calculate efficiency gains. Nevertheless, it is reasonable to surmise that, in this instance, the potential gains have not materialized.

Turning to qualitative indicators, improving the capacity of staff to learn is probably the best means of ensuring long-term gains in efficiency and effectiveness. LS pays particular attention to this and the benefits were visible in the three pilots. The systems team members became more critical of existing ways of working, able to recognize how what they were doing fitted into the overall system, and better able to communicate their insights. This learning was extended to front-line workers engaged with the flow charts and redesign experiments, and to other groups drawn into the project, such as the Housing Benefit teams in Preston and contractors in Tees Valley and Leeds.

Of course, not all staff impacted by the pilots felt as happy about what was happening. Some were suspicious and, in Preston, even hostile. In this regard LS seemed to prove its own point that systems thinking is best learned by doing it. Further difficulties are encountered when a systems study starts to come into contact with other systems that are not being redesigned at the same time, as was the case with the voids and relet system in Preston. There is evidence moreover

Table 3 Potential annual efficiency gains in the three pilots

<i>Process removed</i>	<i>Actual cost savings if applicable</i>	<i>Efficiency gain to be reinvested</i>
<i>LEEDS SE HOMES</i>		
Administration		£11 250
Removal of pre tenancy termination visit		£4000
Transfer of reletting process into dedicated Lettings Support Team		£22 500
Reduction in relet time	£95 000	
Unnecessary bidding by homeless applicants removed; improved accompanied viewing	£1900	£900
More focussed sign up procedure		£4500
<i>PRESTON C.C.</i>		
Personal contact improvements	£277	£2271
First week's rent taken for all non-HB payers at sign up and payment profile set up for each new tenant	£450	£10 824
Correct completion of claim forms at sign up	£206	£3382
Rigid tenancy start date removed	£300	£12 573
Connection of gas/electric improved		£1189
ICT, HB and administrative improvements	£7503	£89 286
<i>TEES VALLEY</i>		
Removal of timesheets		£3700
Reduction in failure demand		£4000
Fewer works orders arising out of end-to-end completion (estimates based on 7000 fewer orders) leading to more work in-house (estimates based on 2000 fewer orders to contractor)	£3500 postage	£70 000 arising out of reduced processing
	£70 000 on contractor costs	
Working with contractors	£2000	£3330
Invoicing		£6500

that the sustainability of improved performance is an issue. In Leeds and Preston the excellent results obtained immediately following redesign were not fully maintained in the later time period. All sorts of factors were involved including, in some instances, the success of the pilot itself. In Leeds South East, for example, properties that had once seemed unlettable began to get tenants and affected the statistics. There is no doubt, however, that maintaining success means continually working at it, and here the commitment of managers, especially senior managers, is crucial. Where they are fully supportive, become 'converted' to the new, systems way of thinking, and are willing to extend projects to new areas, the chances of long-term success are excellent. In Leeds South East additional work has been undertaken on rent collection. This work dovetailed with the voids and rehousing pilot and has widened the knowledge of systems thinking within the organization. The sponsor at Leeds sums up their experience thus (NHC, 2006):

'We all recognized in the early days that systems thinking gave staff the opportunity to develop and to influence how services develop. Getting the culture to change to allow this is not easy and needs constant effort to get it embedded. It is my view that developing staff and releasing their creativity gave

us the impetus to reduce void numbers as people thought of new ways to attract and keep customers. Once embedded, the culture change feeds into other service streams and the capacity for improvement goes up exponentially. It is like sitting on the tarmac at the end of the runway - you can feel the surge as the pilot turns the power on, and you know you are off. It takes time and effort but the rewards are huge.'

Further LS work has also been carried out at Tees Valley and, even at Preston, it has not been ruled out.

The Evaluation Panel also commented on the possibility that those organizations adopting LS might experience a continuing tension between the new customer—focused, 'whole system' measures of performance and more traditional indicators imposed on them. This occurred, for example, in Tees Valley when the number of 'urgent' jobs completed on target, according to the usual measure, fell from 98 to 72% following redesign. A 'job' had traditionally been measured by the completion of a works order and this bore little relation to the actual end to end time needed to finish the full repair. The deteriorating figures were the result of the change to measuring 'whole repair' times—which is the thing the customer is interested in. Unfortunately, the problem continues even after redesign is complete because

'inappropriate' measures may still be applied by a higher level system. Tees Valley had to go back to measuring 'completion' of urgent jobs in the old way in order to conform with the requirements of the traditional indicators.

The focus of LS on effectiveness is the reason it frequently runs into trouble with targets and performance indicators. For that reason, although LS is able to deliver efficiency savings, evaluating it only on that basis is, in a sense, to miss the point. The area in which it seeks to make its main contribution is in improving effectiveness rather than efficiency—doing the right things rather than just doing things right as Ackoff (1999) has it. This is why there is such an emphasis on revising the purpose of the system to bring it into line with the customer's purpose. Doing the right thing, in LS, is doing what the customer wants. Inappropriate measures can distort behaviour in ways that are not beneficial to customer purposes—they can lead to people finding better ways to do the 'wrong things righter' (Ackoff, 1999). To achieve the goal of effective redesign, LS ensures that service users' requirements are paramount throughout. It is from the customer's perspective that the service is analysed, redesigned and evaluated.

LS as a generalizable systems approach

To evaluate LS as a generalisable systems approach we turn to CST, which has as one of its main priorities evaluating the strengths and weaknesses of different systems methodologies, and delimiting their most appropriate areas of application (Jackson, 2000, 2003). To conduct its critique, CST will often examine a methodology, look at examples of it in use and then interpret the evidence available using one of its theoretical devices—paradigm analysis, metaphor analysis or the 'system of systems methodologies' (SOSM) (see Jackson, 2000, 2003). This is the procedure adopted here. We first review the evidence for clues about when LS might succeed and when it might fail. The SOSM is then employed to help synthesize the evidence and place LS in context, against other systems approaches, in terms of its strengths and weaknesses. The SOSM was first devised by Jackson and Keys in 1984 but it has stood the test of time, is the most cited way of classifying systems methodologies, and was the device actually used in the ODPM report (2005).

There are some conditions assisting success, mentioned in the ODPM report (2005), which surely apply to all change programmes, and therefore tell us little about the specific capacity of LS. In this category come an organization willing to challenge the *status quo*; one where staff have not become disillusioned by previous change initiatives; one with good relations with other bodies likely to become involved; and one with sufficient capacity to release the resource necessary to run the initiative.

On the other hand, the report does hint at circumstances where LS met with difficulties in a way that other approaches might not, and an analysis of this evidence may help us to better delimit its specific domain of competence. Of partic-

ular significance it seems are issues surrounding the unity of purpose of stakeholders and the degree of independence of the system under review from other systems.

The LS approach requires a clear definition of the purpose of the system from the customer's point of view. It will obviously work best when such a clear definition can be easily obtained. This may come about because the relevant stakeholders share a common aim or it may require the intervention of a powerful sponsor with strong senior management support. Both those elements are mentioned in the ODPM report as important for LS's success. LS will have more problems when there are different candidates for the role of customer. For example, one can imagine different definitions of purpose for a local authority housing system being suggested by the tenants, by representatives of other local authority departments, by private householders, by council tax payers, by employees of the system, by central government, and by sections of society who see themselves as discriminated against in the housing stakes. In these circumstances, it can be argued, it is the role of systems thinking to express the implications of these different purposes, perhaps in a variety of models, as Checkland's (1981) soft systems methodology does, so that discussion and the political process are better informed.

From a soft systems viewpoint, the Vanguard approach fails to pay due attention to the variety of possible purposes. Tees Valley was a self-contained organization, with a strong corporate identity, operating out of a single site and all employees could see the work progressing on a day-to-day basis. This helped to create the unitary climate in which LS can flourish. In Leeds South East and Preston (see NHC, 2006) pluralism raised its head when areas, not initially involved in the projects, became affected by them. At Leeds concerns were expressed in a staff satisfaction survey which reported:

'There are some internal issues that mainly reflect local offices feeling disconnected from the Property Letting Team allocations process. These concerns spread over the whole process and range from concerns about the introduction to the house/area at the accompanied viewing, to undertaking a new tenancy "blind".'

At Preston there was actual resistance in some area offices and other directorates to the new way of working. In these circumstances, when there is a pluralism of purposes, LS is less well equipped to succeed.

Turning to the second issue, there is a well-known systems principle that we should plan simultaneously and interdependently for as many parts and levels of a system as possible. (Ackoff, 1999). The LS approach seems willing, however, to redesign sub-systems with little reference to other parts or levels. Optimizing the performance of just one sub-system risks the danger of 'sub-optimization'. Sub-optimization refers to the possibility that apparent improvements in one sub-system might make the performance of the whole system worse. It arises because of the importance of the

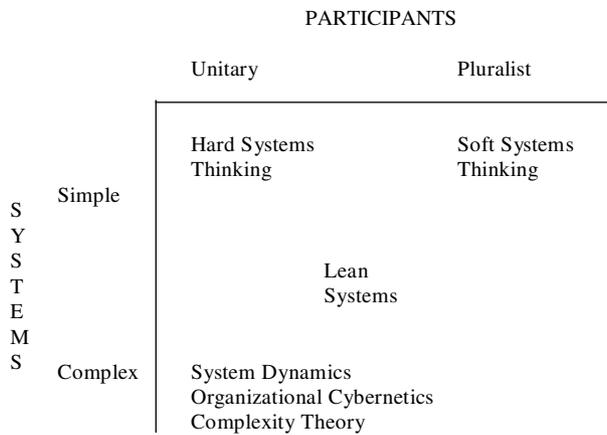


Figure 2 The strengths of some well known systems approaches.

interactions between the parts in complex systems. LS recognizes issues of sub-optimization at the system level at which it is operating but pays less attention to them at the wider system level. As was mentioned, the senior management at Preston were of the view that the work focussed on rent arrears in isolation and did not pay due regard to other service areas affected, in particular the management of voids (NHC, 2006).

Of course, there is a danger in pushing this point too far. In a certain sense everything is 'interconnected' and you can never be absolutely certain that any intervention will bring comprehensive, system-wide, sustained improvement. Action has to be taken and some risks need to be run. It is also possible to point to the greater dangers involved in attempting to undertake whole system improvement all at once. And to the need to convince more decision-makers to take part—which might mean you would never get started. A balance has to be struck between the risk of sub-optimization and the pragmatic requirement to take some appropriate action. These are important matters though and ones that LS needs to consider carefully. There are other systems approaches, such as Beer's (1979) 'organizational cybernetics', that would seek a more comprehensive design brief up-front and have more to say about how sets of processes can be coordinated and controlled to ensure that each contributes to, rather than endangers, the viability and effectiveness of other parts and the whole system. At present it is possible to argue that LS is more appropriate for situations where sub-systems are relatively independent rather than more complex problem situations where sub-systems share close interrelationships and exist in a turbulent environment.

These deliberations allow us to position LS on the SOSM devised by Jackson and Keys (1984). The SOSM argues that the development of applied systems thinking can be seen in terms of movement made along two axes (Jackson, 2003), as shown in Figure 2. As systems thinking sought to overcome the limitations of the hard systems approach, in dealing

with complexity and the different perspectives of various stakeholders, it evolved along these two axes. Methodologies such as system dynamics, organizational cybernetics and complexity theory developed to enable decision makers to cope with greater complexity in the systems they managed and in the environment of those systems. The various soft systems approaches, such as Ackoff's (1999) and Checkland's (1981), developed to help managers cope with pluralism—a diversity of possible perspectives among those concerned with systems about their purposes. We can then position different methodologies on the grid as in Figure 2.

The Vanguard methodology is shown as coping with some aspects of complexity, for example through its redesigning of systems against demand, and some aspects of pluralism, for example through its involvement of those who do the work in redesign. However, it does not place complexity and pluralism at the centre of its concerns, as do organizational cybernetics and soft systems methodology respectively. Of course, movement along a dimension does not make a methodology any 'better' than the others—something is lost as well as gained.

There is one final theoretical point to make. In recent years, it has been fashionable in OR and systems thinking (Mingers and Gill, 1997; Jackson, 2003) to argue for multi-methodology practice on the basis that if no one methodology can provide the answer in a problem situation then it is best to use different approaches in combination. The relative success of LS in the project described makes us wonder whether equal attention should be given to 'methodology—expansion'—learning to expand particular methodologies when using them in practice to overcome the weaknesses they inevitably possess because of the paradigm within which they were originally formulated. The claim of LS is that though it is essentially hard, and retains the benefits of being so, it is able to move in both pluralist and complexity directions as required. For this claim to be justified the methodology would, for example, need to develop to take more account of the viewpoints of those affected but not involved in redesign projects.

Conclusion

Systems thinking is being taken seriously in Government in the UK. The reasons for this are set out in Jake Chapman's (2004) DEMOS pamphlet on 'System Failure'. That pamphlet excited considerable interest in government circles although, as he regrets in the preface to the second edition, very little action has followed. Perhaps the reason is, as Chapman also suggests, that the 'how to do it' of systems thinking was not well enough specified. That excuse is no longer available to Government. The LS approach provides a well-specified methodology embodying many important aspects of systems thinking which have, as the ODPM report concludes, enabled it to fare well in the pilot projects described in this paper. LS can be recommended as a useful methodology for bringing improvement to systems in the housing sector and, we believe,

in many other areas of service delivery. Obviously, however, no one approach can do everything. There is much to gain from carrying out further experiments, in support of Government policy initiatives, both with LS and with other systems methodologies.

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