# Coping with transformation: how will social care information systems change in response to changing requirements?

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## Abstract

*Plans to transform social care in England are well advanced but the implications for information management have not yet been thought through systematically. This paper lays a theoretical foundation for the development of a new kind of information system that will be required if this transformation is to succeed where previous ones have failed. In a world where evidence of success has to include more than just numbers, systems will need to have the capacity to summarise and report from documents as well as databases; and if person-centred, outcome-focused working is to mean more than simply additional and different boxes to tick, we must use better ways to collect and analyse information about people.*

*Such changes in information systems will inevitably feed back into the structure and culture of social care organisations, so it is important that they reflect the best possible use of technologies such as 'text analytics', as well as reflecting the real world in which social care operates. To achieve this, they will need to be designed by people who understand complexity and can build systems that do more than make over-simplistic assumptions for the convenience of computer programmers.*

**Keywords:** Complexity, information systems, outcomes, transformation

I have been attending Social Services Research Group meetings for many years, and in all that time there has been one consistent topic of conversation between formal sessions: failures in information systems. Areas of concern include the time taken to record case details, the difficulty of obtaining timely and accurate information to support management decision-making, the costs involved in purchasing, licensing and maintaining information systems and the need to keep up with changing requirements relating to corporate and governmental performance frameworks.

Information exchange with other organisations is another problematic area. The majority of social care information available is held in case files rather than databases; some of it could be described as semi-structured, that is, held in forms where there are a number of named fields containing free text on specified topics, but much is in running records of events and conversations. Electronic case files have improved communications within social care but have made systematic exchanges with, for example, health services almost impossible.

## Putting people first?

The changes proposed in *Putting People First* (DoH, 2007) which are designed to produce significant advantages for service users, potentially demand an entirely new approach to the process of assessment, care management and service provision. In the new world of social care, assessors should be helping people articulate their aspirations, and design service plans that take account of those aspirations and eligibility criteria. Service users will specify their desired outcomes and the review

process should then see whether those outcomes are being achieved and whether there are further needs that also meet eligibility criteria. This process will mean that it will not be possible to collect hierarchically-structured, categorical data on key aspects of service provision such as desired outcomes, which will by definition not fit into neatly categorised boxes. There is evidence that some elements of strategic planning in social care are turning away from the focus on outcomes for individuals towards 'population outcomes' which are much easier to measure; it would be a shame if another opportunity to improve the quality of social care were to be lost in this way.

On the other hand, the recent green paper (DoH, 2009) on social care proposes that there should be a single national standard assessment, as if the interaction between social worker and service user could be usefully forced into a standard format, so as to make the bureaucratic process of resource allocation easier. This is proposed with little supporting evidence beyond the statement that "people have told us that they want a system where they are not at risk of losing their care and support just because they have moved somewhere new" (p.48). There is no real discussion of the paradox between the standardisation of assessment and the development of a system where "local authorities are able to respond to local needs and local priorities" (p.48) – how are authorities to understand changing local needs from a standardised assessment? What if there are local needs that are not sufficiently covered by this standard assessment? There is also no real consideration of the implications for person-centred practice, for example there is a statement that, "you will only need to have one assessment of your needs to gain access to a whole range of care and support services" (p.55), as if all possible categories of need can be specified in advance, rather than discovered over time, in line with the principles laid down in *Putting People First*.

## Changes in the performance assessment framework

At the same time, the new performance criteria being developed are based on multi-layered evidence structures that include strategies, policies, anecdotal evidence of outcomes for individuals and public and service user opinion surveys as well as standardised national performance indicators (CSCI, 2009). This is forcing local authority social care departments to consider new ways to compile not only the tightly-categorised data in rigid structures that characterise conventional databases, but also textual information, with ways to track its content and meaning. Commercial organisations have been experiencing similar challenges for some years, and seeking solutions; the sheer volume of textual information available both within organisations and from the internet is creating huge problems, illustrated by this quote from an SPSS executive white paper published as long ago as 2002:

> … *in the last few years an increasing amount of essential business information is being held in unstructured and semi-structured formats. Letters, emails, documents, news feeds, and presentations etc. are forming the backbone of most companies' information systems. Accurate retrieval and organization of this information is becoming an enormous challenge for all large companies.* (SPSS, 2002)

Software developers and information specialists have been working to develop solutions to these problems, and techniques developed to power search engines have been applied to what is known as text analytics, with some success. People like Seth Grimes of Alta Plana are leading the way and the 5th annual *Text Analytics Summit* has reportedly been a great success (see http://www.textanalyticsnews.com/usa/ for more details).

Papers are beginning to appear in peer-reviewed journals which make use of software to analyse free text, for example Sweeney (2008). Such software has been found to provide reliable summaries of textual data in the form of a dataset that can be analysed statistically, and the process is described as very quick compared to traditional qualitative research methods. Since this analysis can be carried out without initial human intervention, it is also arguably less prone to distortion by researchers' preconceptions, if the document selection is based on genuinely random sampling.

## Theoretical frameworks

Academic studies going back as far as Norman (1988) suggest that the most easily used and therefore effective information systems are designed so that the structure of the system mirrors the way that the users perceive the situation that is being monitored. This is the basis of 'object-oriented' programming, where the information system contains a virtual model of real 'objects' which interact in the same way as the real ones. The application of this principle to a fully transformed social care department would mean operating a 'person-centred' information system, probably an extension of the electronic case file, which would make the derivation of aggregate information and national performance indicators a hugely complex problem. But the operation of this sort of system would be easier for social workers than conventional databases, since this is the way that they have always recorded their work, and would be, by definition, more flexible and adaptable than existing systems. So, although systems designed on object-oriented principles for a fully transformed social care service would present major technical challenges, they might also offer an opportunity to deal with some long-standing problems in unexpected and fascinating ways.

## Information systems for social care

Information systems for use in social care have historically been designed as typical management information systems, that is, as hierarchical databases. The implicit assumption is that there is a similar structure in the information being stored and in the organisation as a whole. However, the move towards partnership working in recent years has made this assumption less safe, and many parts of local government are finding that their existing systems make sharing information within local strategic partnerships, for example, very difficult; the 'respect' website (http://www.respect.gov.uk, accessed 15/2/09) had many pages explaining what can be shared and what needs to be done to make this safe and legal.

In my experience, there is no natural hierarchical structure that can be generally applied to the data we collect on social care, even before the implementation of *Putting People First*. There is no 'absolute truth' about a service user, only how things appear at the time, and, while simple descriptions of the process (referral, assessment, care planning, service provision, review) seem to offer a neat linear model, the reality for service users can be very different – Diagram 1 illustrates the sort of non-linear workflows that are common in social care. Service users are often carers for other service users, with existing support packages provided by friends, neighbours and other organisations; problems within this network are often invisible during the initial assessment and needs change rapidly once a new element (such as a social care service) is added. This problem makes the use of conventional information systems difficult for social care practitioners, because they cannot see how the work they do can be recorded accurately in such a framework, or how the information produced from it could possibly reflect their experience.

**Diagram 1:** The care management process
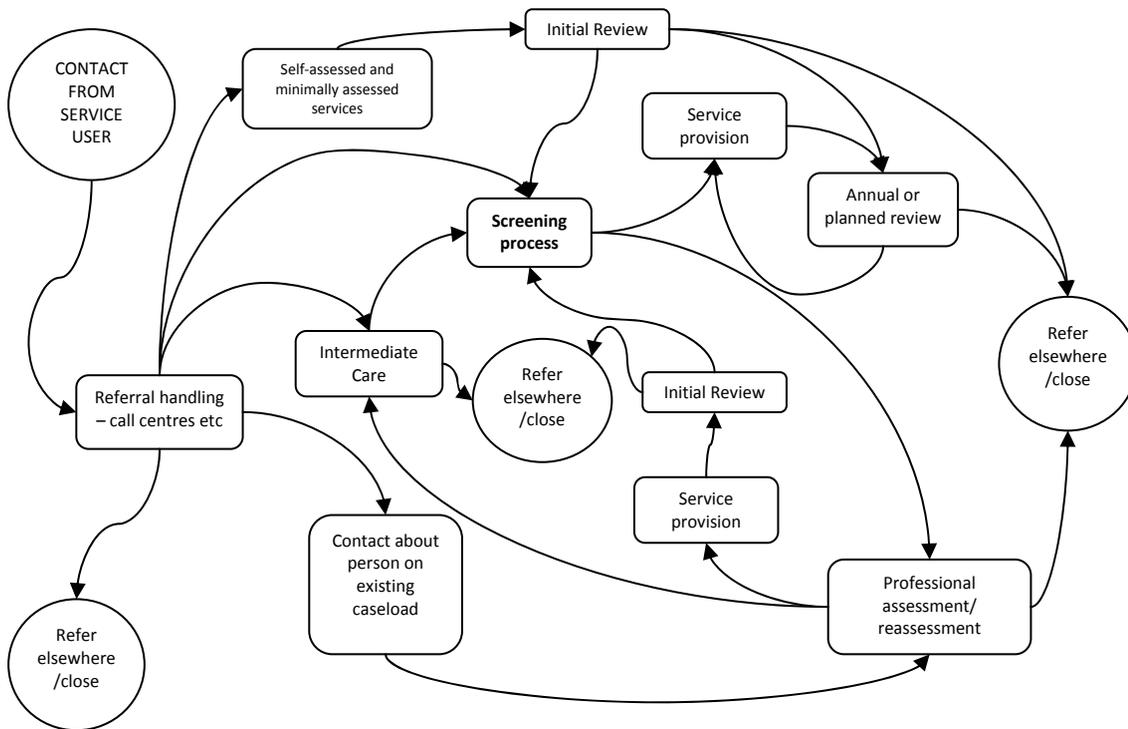


## Complexity theory

This sort of situation can be described as 'complex' within the usual definition of the word. Complexity science looks typically at situations where a number of issues interact in such a way that they cannot be dealt with in isolation. This is often described as looking at situations where the whole is more than the sum of its parts, so that a bit-by-bit analysis of the whole destroys the most important elements. There are often non-linear aspects to such situations – a small change to the starting conditions, often too small to be easily visible to an observer, may have an enormous effect on the outcome. Apparently similar situations may proceed in entirely different directions. Complexity science represents an attempt by conventional science to develop a deeper understanding of the real world, without the

simplifications and generalisations of the laboratory, and its application in management science is producing some fascinating ideas.

As suggested in a paper by Downs (2007), there are aspects of complexity theory that might offer useful insights for organisations offering social care. Complexity science includes areas such as the many forms of systems theory, cybernetics, fluid dynamics and chaos theory, with applications in systems analysis, computer science, mathematics, engineering, meteorology and biochemistry – but also in organisation theory and the social sciences. For example, Checkland and Poulter (2006) propose an approach to problem-solving called 'soft systems methodology'. This grew from techniques developed for requirements specification in the design of information

systems, and led to the development of structured systems analysis which has largely been replaced by more flexible methods. However, the original model can be used to develop action plans to deal with situations where even the precise definition of the problem cannot be agreed – surely something that should be of interest in social care environments.

The terminology in academic papers referencing complexity is often specialist and difficult but there are examples of useful concepts among the jargon. For example, in his paper 'Multi-ontology sense-making: a new simplicity in decision making', Snowden (2005) suggests that managers and decision makers should be able to choose from a diverse range of techniques and frameworks to cope with the variety of situations they face. He rejects simplistic approaches and management fads while proposing a two-dimensional analysis of situations, with the degree of order as one dimension (defined as the extent to which cause and effect can be reliably understood and used to predict the future) and the other as "more of a continuum between the low ambiguity of rules that can easily be made explicit and the more ambiguous use of heuristics or rules of thumb which provide guiding principles but have high levels of ambiguity" (p.5). This can also be described as a 'rule-based against pattern-based' dimension. This is illustrated in Diagram 2.

Snowden suggests that most situations can be classified as ordered or un-ordered, and rule-based or pattern-based. He characterises process management as being appropriate in an ordered rule-based situation, systems thinking as useful in ordered systems which work on heuristics, computer simulation as one of the useful approaches in an un-ordered but rule-based situation (such as traffic management) and calls un-ordered systems with heuristics rather than rules 'social complexity', and identifies this as the location of the most difficult problems.

The paper goes on to identify that human societies are able to operate in different quadrants as a result of conscious choice or even simultaneously, and that this is what makes most normative management techniques unreliable – just when the approach seems to be working, the situation changes state and success slips away.

The provision of social care can credibly be located as more 'pattern-based' than 'rule-based'. However, although in the process of assessment and care management, there is an implicit assumption that cause and effect are understood and therefore this ought to be amenable to analysis using the ideas of systems theory, much of the time this is an optimistic assumption rather than solid fact. Much of social work practice therefore really operates in the area of social complexity.

**Diagram 2** Snowden's classification of complexity

| Un-Ordered or Ordered | Rule-based and Un-ordered - use simulation & modelling | Pattern-based and Un-ordered 'Social Complexity' |
|---|---|---|
| | Rule-based & Ordered - use business process engineering | Pattern-based and Ordered - use systems theory |
| | Rule based      or      Heuristic (pattern)-based | |

Snowden's model is pragmatically useful in this situation, since it can be used to explain why business process re-engineering has failed to deliver the expected improvements in the management of social care. The majority of information systems targeted at this area of work are based on the assumption that social care is ordered and rule based. Early work by CSED (2008a) on *Putting People First* looking at business process re-engineering show the characteristic simplistic approach that underlies this model of thought, while slightly more recent work (CSED, 2008b) on care pathways begins to show signs of moving towards a more systems-based approach, with discussion of the application of systems dynamic models and recognition that a simple linear model is unlikely to deliver the required quality of service management.

## Systems dynamics

Systems dynamics were developed in the 1950s by Jay Forrester at Massachusetts Institute of Technology, to address failings in the application of Taylorist techniques to manufacturing industries. Forrester showed that the linear models used to manage production lines were unsatisfactory, and introduced ways to take account of stocks of raw materials and components in such circumstances, including the modelling of feedback loops. Over the next 30 years, systems dynamics developed into a technique which enabled computer simulation to be applied to such problems, as complicated equations were developed, tested and applied to social and financial problems.

On Snowden's model, therefore, systems dynamics represent an anomaly; the combination of computer simulation (which implies rules rather than patterns) with systems theory seems to suggest that the distinction along both axes in Diagram 2 is perhaps less clear than Snowden claims.

Snowden does suggest that the horizontal axis is more of a continuum than a clear division. On the vertical axis, it is interesting to note that the modelling techniques of systems dynamics seem to involve assuming that one can trace patterns of cause and effect when using systems techniques to posit equations, and then run simulations based on probability and random factors to test their utility. Systems dynamics therefore do not in themselves invalidate the Snowden model but they do illustrate that real world situations can be placed in different quadrants when analysed in different ways.

The work by CSED represents a rare explicit application of systems theory in the form of systems dynamics to social care strategic management, and this represents a significant change in approach from their previous focus on business process improvement. Snowden's wry observation that a management fad is only marketed to the public sector when there is no opportunity to get a better price for it from the private sector – that is, when it has been largely discredited – might seem to suggest that there may be some cause for concern for systems theorists here.

## Systems theory and critical systems thinking

Before the general adoption of care management, social work training often included some elements of systems theory, with some disputes about its value and effectiveness (e.g. Forder, 1976; Leighninger, 1977). The change from 'social work' to 'care management' in the 1990s seems to have coincided with systems theory losing its place on the curriculum. For example, a search of the SCIE library for items relating to social work training and systems theory for adults resulted in 64 items, only 10 of which were published between 1994 and 2002 (an average of less than 1.7 per year), while the average for

1989 to 1993 was 3 per year - and it is interesting to observe that the average since 2003 has been 5.6. Anecdotally, social work training became less about empowering and understanding service users and more about managing resources at this time. It is possible that the recent interest in systems theory may have contributed to the change of direction implied by *Putting People First*.

There are a number of branches of systems theory, many with obvious and explicit applications in social work theory and practice.

Critical systems thinking is being developed by Werner Ulrich, from the work of C.W. Churchman, one of the founders of operational research and management science. Ulrich, Professor of Philosophy at the University of Fribourg and a visiting Professor at the Centre for Complexity and Change at the Open University, is a champion of reflective practice, concerned about the need for a new definition of the rights and responsibilities of the citizen in a world where global corporations limit the power of the democratic state to influence the social and economic environment. He suggests that systems theory, and in particular an understanding of the effects of boundaries on systems, could be of assistance to people in understanding the workings of the world they live in – Ulrich seeks "to increase their critical competence *vis-à-vis* the rationality claims raised by vested interests or by the experts in their services" (Ulrich, 2003, p.3) – which is particularly of interest given the intention of *Putting People First* to enable people in receipt of social care to be regarded as experts in their own care by the professionals assessing them.

Boundaries, in systems theory, are the distinction between the 'system of interest', the elements of which are being studied, and the environment in which the system is operating. There will usually be a high level of interaction between the system and its environment, and the definition of the boundary is usually a subjective choice made by the observer, rather than an absolute or objective reality. Ulrich's argument seems to be that people should be helped to understand that they need to look carefully not only at what the expert opinion is but also at whether they are talking within the boundaries of their expertise, and whether the opinion they offer is influenced by unsafe assumptions or tunnel vision. This could provide a framework within which service users are encouraged to think holistically about their situation and make independent judgments about proposals being made for their care.

## Complex responsive processes

While critical systems thinking offers useful insights into interactions between professionals and service users, many aspects of complexity science have been used to describe and theorise about organisations as systems. Books such as Morgan (1986) and Senge (1990) offer a variety of metaphors and investigate the power of such images to influence patterns of thought. Another aspect of complexity science – the study of complex responsive processes – provides a novel view of organisations that might give a sound theoretical basis to the planned transformation in social care.

In the introduction to 'Complexity and the Experience of Managing in Public Sector Organisations', Ralph Stacey and Douglas Griffin (2006) describe organisations as 'patterns of interaction between people', 'the simultaneously co-operative – consensual and conflictual – competitive relating between people' rather than as objects with stable characteristics and independent reality (p.4). They go on to say that this produces a situation where the view of an organisation as a system 'affected by patterns of power and economic relations in the wider society … over and above the organisation and its individual members'

cannot be valid, because interactions happen between individuals – there is no single entity that can be influenced. Another significant consequence of this model of organisation is that there can be "no overall programme, design, blueprint or plan for the organisation as a whole". Such things:

> *... exist only insofar as people are taking them up in their local interactions. Any statements that the powerful make about organisational designs, visions and values are understood as gestures calling forth responses from many, many people in their local interactions. The most powerful can choose their own gestures but will be unable to choose the responses of others, so their gestures will frequently produce surprising outcomes.* (p.9)

This idea represents a significant development from Senge's learning organisation, and one which provides an attractive explanation for some of the problems with change management in health and social care in recent years.

The development of the outcomes framework in *Our Health, Our Care, Our Say* (DoH, 2006) and the multi-layered evidence model proposed by CSCI (2009) would seem to be a more effective response to this theory of organisation, and the proposals in *Putting People First* clearly fit with this model as well. But there is as yet no information system that can provide the flexibility required to match this view of organisation and still provide the statistical data required by the recently introduced National Indicators. Maintaining the two in parallel would continue the conceptual dissonance that has caused so many problems in recent years.

## How does all this theory link to the everyday problems of administrative and information systems?

Most importantly, it offers a way to make progress on the vexed questions of process, performance and information management in social care. The design of systems in the widest sense to organise the provision of social care has been for many years driven by quantitative targets set largely without understanding of the likely unintended consequences. This paper has summarised evidence suggesting that such systems are structurally unsuitable to monitor the person-centred services required to meet new government policies. Achieving the transformation of social care will require the implementation of new systems that are designed to capture person-centred information.

Snowden's model confirms that where systems are required to deal with issues that can reasonably be regarded as amenable to process engineering – for example in financial systems – then the techniques of process engineering are entirely appropriate. But the collection of information on individuals' needs and the outcomes they desire requires an approach that is less structured and more flexible; the data are, by definition, not amenable to simple categorisation and will resemble semi-structured free text. This will require the application of relatively novel technologies, applying ideas such as emergence and techniques like concept and content analysis, to ensure that evidence of individuals' needs and aspirations is collected and used both to demonstrate adequate performance and to ensure that commissioning decisions are made on the best available information.

A possible way forward may be found in the design of the electronic social care record. Systems such as this tend to be flexibly-

structured collections of documents, reflecting the content of the paper case file but also the underlying structure of the information being collated. However, there is no software marketed as suitable for social care that enables this information to be analysed statistically without a great deal of manual coding and effort; authorities will need to look at packages aimed at market research and academic disciplines such as anthropology to find suitable products. Such systems will also reflect the cultural changes that are required in the transformation of social care and reduce the dissonance between the structure inherent in social care provision and the structure of existing information systems.

In a transformed social care organisation, evidence of good performance will include anecdotal as well as statistical information, showing that policies are being implemented. It will also be possible for transformed systems to identify areas where policies may not be having the desired effect and monitor the effectiveness of remedies as they are applied; they may therefore become ways to evaluate the quality of management and leadership in a much more effective way than the purely numerical systems applied in the Performance Assessment Framework.

However, the process of assessment and care management makes an intrinsic assumption that it is possible to understand the effect of the work or inputs agreed; during an assessment, the social care worker evaluates the needs of a potential service user and agrees a package of care intended to meet those needs and achieve agreed outcomes. This places the assessment and care management system in the 'systems theory' area of Snowden's model, suggesting that it should be possible to model the process via diagrams such as Diagram 1, looking at the flow of work around a social care organisation. This allows simple operational information (number of referrals, number of assessments

completed) to be viewed in context rather than in isolation and offers a way to track the constantly changing state of the organisation.

But for all the worthy intentions of policy makers, the reality of organisational life is that, as Stacey and Griffin state, the blueprint may be good but individuals in each organisation will decide for themselves how to respond to the demands made on them. Well designed, robust systems based on an understanding of the complexity of the task could encourage good practice but may also be seen as intrusive and overbearing. It will be important to ensure that the different components of the system work smoothly together and that the boundaries between them are placed in the correct locations; otherwise the unintended consequences of the new systems will be no better than those causing difficulties in social care at the moment. Practitioners will find it hard to believe that change could at last be change for the better.

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