



Not invented here – the application of industrial improvement approaches in the NHS

A recent British Medical Journal article described some well-known industrial and commercial process improvement approaches and their applicability to the NHS¹. The authors described lean thinking, theory of constraints, six sigma and scenario simulation and claimed they can be effectively applied to health care.

Tricordant's directors have a long and successful history of working across industrial and commercial sectors as well as the public sector including health care. This work has brought us into contact with these other approaches in variety of organisational contexts. Clearly different approaches work more effectively in different cultures and contexts with their different degrees of process stability and complexity.

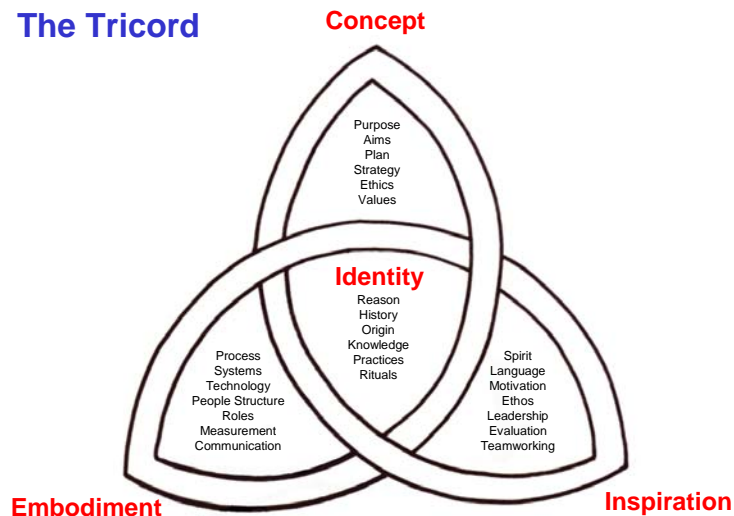
It is clear that a number of industrially based approaches have indeed been successfully applied in the NHS helped in part by the championing of “clinical systems improvement” by the Improvement Partnership for Hospitals of the Modernisation Agency.² Many improvements in NHS performance such as reductions in surgical cancellations, reduced waiting times and faster A&E throughput can be related to the general application of this thinking as well as considerable additional resources.

However the real question is whether “clinical systems improvement” is a comprehensive approach that represents the optimum approach to improvement available to the NHS? The experience of many of our clients in industry who have had a long experience of applying lean thinking and associated improvement techniques is that they do not represent a sufficient or all encompassing panacea on their own. The good news is that even greater levels of improvement are available when a true whole systems “socio-technical” approach is applied.

In designing an organisation from a whole systems perspective, each level needs to build on the one below and each level needs to be aligned with all the others to create a system delivering the overall customer/patient-centred purpose. Tools adopted from modern manufacturing and Lean typically optimise only one level of the whole system; the process flow, resource capacity planning, planning systems or team-working for example. They work at this component optimisation level not at the overall whole systems level. We use the tricord below to consider organisations as dynamic socio-technical systems.

One way of thinking about this is to use an analogy of designing a complex building rather than designing an holistic organisation. You would first turn to an architect before engaging the specialist craftsmen. An architect is somebody whose job it is to design a whole structure for people to live and work within. A craftsman is somebody who is an expert in specific tools and techniques. To design a complex building you need both a good architect as well as good structural engineers, builders, heating and lighting engineers, interior designers, electricians, plumbers, decorators, etc., etc. The architect's plans ensure all the experts' works are aligned.

Architects are interested in designing the whole building in a consistent and integrated way to achieve the specified overall purpose of the building – they work at the whole systems level. Craftsmen work at the component/sub-system level applying their expert skills and knowledge to perfect local parts of the whole. Similarly, in organisational design you need both experts in designing and integrating the whole strategy, structure, systems, culture and style of the organisation, as well as experts in the detailed design and formation of various sub-systems and components. The architects' plans ensure all the experts' work is aligned to achieve the overall purpose.



Tricordant's approach can help complex adaptive systems such as health care organisations realise the benefits of specific process approaches such as lean thinking but at the same time recognise and address the needs of the people and teams working in the system. Our approach is backed up by congruent tools ensuring this is done in a holistic and integrated way.

The health care context is unique and complex for a number of factors. I have been working with Dr Robin Youngson and colleagues at Waitemata District Health Board in New Zealand for some time now in conjunction with Alistair Mant of the STS Group, Tim Pidsley of Tricordant ANZ and Christian Schumacher of WSL. In a recent paper Dr Youngson summarises the key characteristics of health care systems, which are summarised in the box below.³

1. "Healthcare is a **complex, self-adaptive system** that includes the health consumers and their families as an intrinsic part of the system. The behaviour of health consumers and health professionals are highly interdependent.
2. Healthcare, as a whole system, is inherently **self-healing**. The good results for consumers are a consequence of highly motivated health professionals, consumers and families actively seeking health and recovery. These good results are achieved despite a number of serious system 'pathologies'.
3. The system has **recurring patterns of organisation** at different levels of the system. The same natural properties and structures can be recognised at the individual, team and organisational levels. Both health consumers and health

professionals are themselves complex adaptive systems with self-healing properties. The next level of organisation – the interprofessional team – also has similar properties, as does the whole healthcare organisation. This is an example of the **fractal geometry** found in natural complex systems. Improvements at each level of organisation (the individual, the team, and the whole organisation) create synergistic benefits at all the other levels because they align with the shared natural properties.

4. The system has **highly distributed intelligence**. The potential for improvement lies within the knowledge of those who work at the front line, not with senior managers and leaders. The 'DNA' of the system exists at this elemental level.
5. The system is **highly non-linear** and contains many feedback loops that reinforce both positive and negative behaviour. The consequence is that small and subtle interventions, when aligned with the natural properties of the system, can lead to major improvement. Conversely, interventions not aligned with natural properties are likely to be resisted by the self-regulating nature of the system.
6. The rich **potential for complex innovation and change lies at the boundary between order and chaos**. Overly prescriptive processes will stifle change. Great richness comes out of self-governing processes of innovation and improvement within interprofessional teams at the front line of care.
7. **The health, safety and wellbeing of individual consumers depend on the health of the whole system**. We cannot expect to lead consumers to health, unless individual health professionals and the healthcare system first lead themselves to health and safety.”

This does not mean approaches developed in other sectors are not applicable but does mean their use in organisational change in health care needs to be managed sensitively and appropriately. Failure to do this will result in messy failure. In the 1990s I was director at a large UK acute hospital pioneering the use of Business Process Reengineering [BPR] and other approaches in the NHS. We employed a blue chip US based consultancy firm to work with our A&E department. We impressed on them the need to work with our staff and take account of the cultural issues around. They completely ignored this request and came back in 4 weeks with a technically accurate BPR analysis of the department that was completely impossible to implement such was the degree of antagonism generated with the A&E staff!

Subsequently, we softened BPR to Hospital Process Redesign [HPR], developed our own in house HPR team and using an internal A&E facilitator repeated the analysis, this time more slowly and with considerable staff participation and in time support. Real lasting and effective change requires the understanding, participation and commitment of frontline health care staff. If the process of understanding existing service provision and exploring opportunities for improvement can (re)connect clinical staff with the real meaning and purpose of their jobs – for instance focussed on promoting and enabling health - then significant as yet untapped energy can be released.

Tricordant has the potential to contribute significantly to effective and practical strategies for organisational change. The Modernisation Agency and NHS leaders are looking to identify opportunities for achieving the next quantum step in healthcare improvement. Socio-technical whole systems approaches can provide the

architecture for real systems development and can facilitate synergistic improvement from the alignment of the needs of healthcare consumers, staff and the overall NHS.

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¹ Terry Young, Sally Brailsford, Con Connell, Ruth Davies, Paul Harper, and Jonathan H Klein. **“Using industrial processes to improve patient care”** BMJ, Jan 2004; 328: 162 - 164.

² Hugh Rogers, Kate Silvester, and Jill Copeland. **“NHS Modernisation Agency's way to improve health care”** BMJ 2004 328: 463.

³ **“An introduction to “Work Structuring” at Waitemata District Health Board”**
Preliminary report for the Education Committee of the NZ Medical Council from Dr Robin Youngson, Clinical Leader of Workforce Development at Waitemata DHB. May 2004
