Modernizing UK health services: ‘short-sharp-shock’ reform, the NHS subsistence economy, and the spectre of health care famine

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Keywords: competition, modernization, NHS, reform, systems theory

Accepted for publication: 24 February 2004

Abstract
Modernization is the trend for societies to grow functionally more complex, efficient and productive. Modernization usually occurs by increased specialization of function (e.g. division of labour, such as the proliferation of specialists in medicine), combined with increased organization in order to co-ordinate the numerous specialized functions (e.g. the increased size of hospitals and specialist teams, including the management of these large groups). There have been many attempts to modernize the National Health Service (NHS) over recent decades, but it seems that none have significantly enhanced either the efficiency or output of the health care system. The reason may be that reforms have been applied as a ‘drip-drip’ of central regulation, with the consequence that health care has become increasingly dominated by the political system. In contrast, a ‘short-sharp-shock’ of radical and rapid modernization seems to be a more successful strategy for reforming social systems – in-between waves of structural change the system is left to re-orientate towards its client group. An example was the Flexner-initiated reform of US medical education which resulted in the closure of nearly half the medical colleges, an immediate enhancement in quality and efficiency of the system and future growth based on best institutional practices. However, short-sharp-shock reforms would probably initiate an NHS ‘health care famine’ with acute shortages and a health care crisis, because the NHS constitutes a ‘subsistence economy’ without any significant surplus of health services. The UK health care system must grow to generate a surplus before it can adequately be modernized. Efficient and rapid growth in health services could most easily be generated by stimulating provision outside the NHS, using mainly staff trained abroad and needs-subsidized ‘item-of-service’-type payment schemes. Once there is a surplus of critically vital health services (e.g. acute and emergency provision), then radical modernization should rapidly improve the health service by a cull of low-quality and inefficient health care providers.

Defining modernization
There is a long-term, international social trend towards a progressive increase in the functional complexity of society, or ‘modernization’, which seems both inevitable and – on the whole – beneficial (Charlton & Andras 2003).

Modernization originally referred to the contrast and transition between a ‘traditional’ agrarian society and the kind of ‘modern’ society that is based on
trade and industry (Gellner 1988). For example, medieval England was a traditional society while late-Victorian Britain was modern. One difference is that a traditional society is ‘vertically’ organized by hierarchical division by class or caste – which is a specialization of prestige. But a modern society is primarily organized by function, and divided into a mosaic of modular social systems such as the political system, the public administration (civil service), the armed forces, the legal system, the economy, religion, education, the health service and the mass media (Pokol 1991; Luhmann 1995).

Modern and traditional societies differ according to their complexity of organization and their rate of growth in complexity. Traditional societies are simpler in organization and have an almost static structure while modern societies are much more complex and are perceptibly growing in complexity (Wright 2000). The most obvious form of increased complexity is the division and specialization of labour (Smith 1776–77; Ridley 1996). Complexity is favoured by evolutionary mechanisms because specialization of function enables greater efficiency – for instance, by the use of industrial assembly lines, or when increased trade enables countries to specialize in what they are best at. Increasing efficiency then frees resources which can be deployed to generate further growth. There can be a positive feedback cycle where increased productivity fuels increased functional complexity, which in turn fuels increased productivity.

Modern societies are therefore based upon growth in complexity, and the expectation of further growth. Indeed the cohesion of modernizing societies requires more or less continuous growth (Gellner 1988), and in the long term there must be growth in the efficiency and output of all the main functional social systems (Charlton & Andras 2003). Growth in modern societies includes economic growth (increasing output and productivity), but also entails ‘cognitive growth’ – which means an increase in knowledge and capability across a wide range of activities such as science, technology and political administration. At present almost all societies are at least partially modernized (as the original kind of simple ‘hunter-gatherer’ social organization is extinct) but the rate of modernization is variable between societies, and between systems in a society.

Because modernization is dynamic, it is more useful to consider modernization as a process than as a structure (Charlton & Andras 2003). A ‘modern’ society is therefore one based on the process of modernization, that is, ‘modernity’. Modernization can be seen as the general mechanism by which the social transformation from agricultural dominance to one of domination by trade and industry takes place, and the ‘permanent’ (i.e. without any known end-point) continuation of this process. The difference between modernizing and traditional societies is profound – being the difference between simple static structure and complex dynamic process.

In a modernizing society such as the UK, it would be expected that social systems such as the health service should have an intrinsic tendency to grow in functional complexity – hence efficiency and output – over time.

**Functional complexity**

The increasing complexity of modernizing societies enables an increased efficiency of information processing, where ‘information’ is interpreted very generally to include all entities with meaning in systems (such as money, agricultural produce, industrial goods, human minds); while ‘processing’ includes any transforming social activities such as economic production in factories, trade, markets, formal education, the health services and the activities of the mass media. For example, increased economic productivity entails increased complexity of information processing by increased division and specialization of labour, increased complexity of economic organizations (factories, offices, etc.), and the increasing use of complex machines and (more recently) computers.

This potential adaptive advantage for more complex systems is the underlying reason why biological evolution has generated ever more complex organisms over the history of life on earth (Ridley 1996; Wright 2000). The largest and most dominant organisms in the history of life on earth are late products of evolution (Maynard Smith & Szathmary 1995) and still extant: the most dominant animals in terms of biomass are complex social animals (humans in the temperate zones and ants in the tropics), and the largest ever human social organizations (nations, corporations, bureaucracies, etc.) are in existence today.
Increased organizational complexity does not inevitably generate increased efficiency, as complexity increases the need for communication and coordination, so there are always costs to complexity which must be outweighed by increased efficiency. However, in modernizing societies there is a selection pressure on each social system by other social systems to increase their output to a greater extent than they increase their input of resources, which means that there is an evolutionary tendency for more functionally efficient increases in complexity to survive, while increases in useless or damaging complexity tend to be eliminated over time (Charlton & Andras 2003). Of course, selection is a ‘trial and error’ process, having the tendency to improve efficiency only on average and over the long term. Selection does not generate perfectly efficient mechanisms or optimal solutions, and short-term changes may be less efficient. Nonetheless, the global tendency is towards greater complexity and efficiency (Wright 2000).

Increasing complexity of systems usually takes the form of increasing functional specialization – which entails a more modular structure; and increasing complexity of organization in order to co-ordinate these specialized functions. The increased need for co-ordination of specialist functions is the probable basis for the evolution of management in modern societies (Charlton & Andras 2005). In biology this can be seen as the trend for progressive increase in complexity of life forms throughout the history of life – starting with single-cell organisms, then ever larger multicelled organisms, then social organisms with the evolution of elaborate mechanisms for co-ordinating these specialized functions. By the time modern humans evolved about 200 000 years ago the organism had become so complex, with so many specialized cells, tissues and organs and the organism operating in so complex a social environment, that 20% of its resources were used by the brain in the co-ordination of bodily functions. The brain is itself divided into many highly specialized regions, whose activities are integrated by ‘working memory’ occupying a large volume of prefrontal cerebral cortex. Similarly, the modern nation or multinational corporation is constituted by hundreds of highly specialized workers co-ordinated by proportionately large governments, public administration and management systems (Charlton & Andras 2005).

Modernizing societies are therefore already complex societies that display the tendency to become more complex with time – this increasing complexity being kept under selective pressure for improved efficiency. Increasing complexity is typically attained by increased specialization of function and increased organization of these specialized human functions. Ultimately, many aspects of human cognition and labour may be replaced by computers and machines. In effect, complex cognitive activity is replaced with complex forms of organization (Charlton & Andras 2005).

The implication is that health services will also tend to increase in complexity with time by increased specialization and organization, so that the system can continue to expand its ‘output’ of health interventions to a greater extent than it expands its ‘inputs’ such as time, energy, money and personnel.

Consolidation and innovation

If we generalize about the typical pattern of modernization in social systems, it emerges that modernization typically consists of a dual process of consolidation and growth – rather like bone development in which a growth plate extends the bone while laying down a stable structure to support itself. Modernization is a dual process in which efficiency savings in unchanging (or slowly or infrequently changing) core activities of the system are used to generate adaptive innovation at the cutting edge of growth.

Consider the example of surgery. Many aspects of surgical procedures are standardized routines, common to many types of procedure. Performance of these standard routines of patient preparation, anaesthesia, tissue handling, diathermy, swabbing, suturing, etc. forms a basis for the highly specific techniques which requires high-level expertise compounded of focused training and experience. Such standardization is vital because it enables efficient methods of achieving reliable outcomes of predictable quality (Charlton & Andras 2002).

However, progress in surgical techniques – functional innovations leading to cognitive growth of the discipline – has substantially been generated by ever finer division of expertise among surgeons who specialize in ever smaller anatomic regions and types of
operation. This allows specialist surgeons to achieve higher levels of experience, including practice of techniques, to be able to compare the outcomes of variations in diagnosis and treatment, and to achieve a greater depth of theoretical understanding of their area of work. In effect, it was the routinization of standard surgical practice that enabled the concentration of attention and effort required to drive innovation. The consequence is that the core standard procedures do not change very rapidly, and it is at the margin of highly specialized practice that growth of the system of surgical technique tends to occur.

Modernization therefore entails specialization, which drives both deskilling and hyperskilling: deskilling of core standard procedures and hyperskilling of the marginal specialized practices which build onto this relatively stable and reliable core. In health services this probably implies a standardization, routinization and deskilling of unspecialized medical practice, in which complex integrated tasks are broken down into sequences of simpler and less-skilled tasks; but also the encouragement of variation, innovation and growth of the health care system among specialists.

This analysis indicates that policies designed to produce an efficient, uniform, reliable service, and to minimize the deleterious effects of human error and inconsistency are appropriate for standard core aspects of the health service; but such policies of ‘rationalization’ need to be balanced with complementary policies to encourage innovation and growth in complexity of specialized service provision.

Selection mechanisms

The strength of modernizing societies (and also some of their weaknesses) is a consequence of the effect of selection mechanisms acting on social systems (Hull 2001). It is selection that best accounts for the long-term success of those paradigmatic exemplars of modernizing societies: science, market economics and democratic government (Charlton & Andras 2003). Understanding the power of selection mechanisms is necessary to understanding how to modernize the health service.

Traditional societies solve problems by application of what they already know. This may be a highly ‘rational’ process (e.g. the development of formal logic was more advanced in the late Middle Ages than it was in the following Renaissance era – and was not surpassed until the 19th century; Broadie 1985). However, when problems are not amenable to rational application of existing knowledge, then traditional societies can get stuck. In contrast, modernizing societies use selection processes acting on social systems to work out the solutions to difficult problems. For instance, the basis of democracy is that a society does not know the best way to govern the country in the long term – and acknowledges that future problems may not be amenable to current policies and procedures. Democracy involves continually generating alternative political programmes, and choosing between them at periodic intervals. Science, likewise, does not know how it will solve future problems, but instead encourages the generation of a variety of ideas which ‘compete’ in the scientific marketplace to see which performs best at predicting observations (Hull 2001).

The crucial point is the process of selection itself that generates solutions to problems, often unforeseen solutions, and builds upon successful solutions. In biology, the immune system does not know in advance which antibodies (of the billions it could make) are the best ones to defeat a particular bacterium. Instead, the process works by generating antibody variants which compete, and those variants that best bind to the bacteria are reproductively amplified. Likewise, the ‘best’ car, DVD player, eating apple, or television programme are not pre-decided by the application of rational analysis, but emerge as the outcome of economic competition. A closer comparison to health services would be the educational system, where it seems that the long-term superiority of the US universities was generated by the operation of selection mechanisms, by means of competition for student demand among a wide diversity of autonomous institutions with numerous sources of financial support (Trow 1991). The ‘free market’ in US higher education stimulated excess provision, and competition tended to preserve and expand those institutions that best satisfied the operative demands (especially fee-paying students).

Naturally, there are inherent limitations to selection mechanisms. Selection does not generate the one best solution, but selects the better solutions over the less good ones. And because continued
selection incrementally builds upon the successes of the past, this often entails also building on the limitations of the past. It can become very difficult to change fundamental social processes because so much has been built upon them (e.g. national legal systems vary considerably and are difficult to harmonize). Furthermore, selection can only operate by a series of incremental improvements, so that selection may block foundational changes that are beneficial in the long term, but too damaging to thrive in the context of short-term competition. It may, in principle, be beneficial radically to re-organize an inefficient health system, including its core procedures, but this could not be carried out if the resulting disruption to health services was so severe as to endanger the population. But selection is also ‘wasteful’ – at least in the short term – because it requires a surplus of variations to enable competition – and of course most of these variations will turn out to be inferior – and some may actually be worse than what went before. Selection processes are inefficient in the short term, because selection depends on the overproduction of competing variants, and most variants will become extinct. For example, large numbers of US colleges and universities have ‘gone bust’ during higher education’s history of educational expansion (Trow 2003).

The short-term ‘wastefulness’ of selection has the excuse that it generates longer-term efficiency. Indeed, selection is probably the only known process for reliably producing systems that are both functional and efficient (Hull 2001). It is, after all, how life on earth emerged, specialized and came to fill every available niche on the planet (Wright 2000; Charlton & Andras 2003). In the long term the solutions discovered by selection tend to be functionally adaptive (although seldom optimally adaptive) because the solutions which survive are those who have demonstrated themselves superior in competition. The information-processing power of social selection mechanisms such as science, political democracy or the economic market is still insufficiently appreciated – indeed it is not widely appreciated that science and democracy are selection-based processes. Instead, it is often believed that the most intellectually sophisticated approach to social problems is rational and technocratic, with experts gathering all relevant information and developing the ‘one best plan’ that accounts for all imaginable contingencies.

But in a growing and functionally specializing society, planning cannot take into account the novel consequences of future growth. For instance, health service planning in a growing system cannot – even in principle – take into account the effects of new health care technologies, new systems of management or the impact of new governments. But selection mechanisms can (usually) cope with unforeseen changes. The system is continually generating a surplus of variants, these variants are competing with each other and with existing practices, some variants survive and grow while others are suppressed, and the system builds upon successful solutions – as it were to grow round and past obstacles. Selection systems are not just self-corrective, but also innovative.

The implication is that creating health systems which will tend to be self-modernizing in the long term requires more than rationalization and standardization – it requires that appropriate selection process are built in to the system. Currently the main selection force, the external system that determines who survives and thrives in the National Health Service (NHS), is government – but is it becoming clearer that a health system regulated primarily by government has significant and intractable deficiencies.

Modernizing the NHS

There have been many attempts to ‘modernize’ the organizational structure of the NHS over recent decades and another such attempt is underway. In this context, modernization refers to the attempt to enhance quality and/or efficiency in the NHS by means of structural re-organization imposed from central government. However, the perceived outcomes of these attempts at modernization have been inconclusive in terms of the stated aims of enhancing quality or efficiency of services (Le Grand 1993; Klein 1995a; Ham 1997).

It is, indeed, possible that previous reforms have overall done more harm than good, as the many attempted re-organizations have made the health system highly politicized (Andras & Charlton 2002). Currently, management of the NHS is excessively driven by the usually short-term agendas of day-to-
day politics, rather than by the much longer-term (and differently directed) strategies required for achieving health-related goals. NHS modernization so far could be characterized as gradualist in effect, even when radical in rhetoric (Klein 1995b): a long-term, sustained, ‘drip-drip’ strategy of centrally driven, incrementally imposed change. Politicization is an inevitable consequence of this sustained history of interaction between the NHS and the political system (Charlton & Andras 2003). The major factor governing the regulation and funding of the NHS has become the requirements of the political system. The health demands of the population only affect the NHS via the political system as expressed by majority voting on a broad political programme every 4 or 5 years, and by political lobbying, pressure groups, media campaigns and other attempts to influence policy (Andras & Charlton 2002).

The key question concerns how NHS modernization can be initiated and maintained by central government without the unwanted side-effect of politicizing the health service. The answer seems clear. Most of the uncontroversially ‘successful’ examples of modernization of complex social institutions (i.e. reforms that achieve their intended aims) have involved the opposite strategy from drip-drip incrementalism.

We suggest that intermittent rapid, radical, short-term reforms are a much more effective strategy than a continual drip-drip of regulation. This style of ‘short-sharp-shock’ modernization aims to reconfigure the social system so that henceforward it operates on different principles. After this abrupt transition the government (or other reforming agency) steps back and reduces its influence until a further wave of radical reform is required. In-between cycles of reform, institutions are allowed to retain their primary functional orientation – which ought to be towards client groups, rather than towards politicians and other regulators.

A medical short-sharp-shock – ‘The Flexner Report’

Short-sharp-shock modernization has usually been the most successful type of reform in economics. For instance, the most dependable way for monetary hyperinflation to be brought under control is to take radical, decisive action – such as introducing a new currency, or slashing noughts off the value of existing currency. For example, in 1948, 10 Reichsmarks were exchanged for 1 Deutschemark (approximately), wiping out hundreds of billions worth of savings but creating a stable currency that formed the foundation for Germany’s post-war prosperity (Radice 1995). Such reforms are inevitably painful in the short term, often leading to a recession (which is why their introduction is so often delayed), but if this phase can be survived then the strategy may be extremely effective in the long term.

One of the most successful modernizations in the field of health care took place in US medical education in relation to ‘The Flexner Report’ (Flexner 1910). Abraham Flexner was a (non-medically qualified) educationalist who toured the USA and Canada between 1908 and 1910, personally inspecting all 155 medical schools then in existence. His purpose was to evaluate their quality in comparison with a clear agenda for reform based on the ideal of the best German universities. Flexner’s vision of medical education had the objective of shaping the medical profession into a scientific elite. Flexner believed that medical schools ought to have high entrance requirements, a large and well-trained faculty, good laboratory facilities, and integration between scientific and clinical work.

Instead of embarking on the complex and slow ‘drip-drip’ strategy of trying to ‘turn around’ failing institutions and produce all-round improvement in a complex system, reformers who supported him adopted the simple, swift and straightforward strategy of bringing pressure to bear that led to the closure of the worst medical schools. The immediate outcome was to improve the quality of the output of medical graduates, and in the longer term the future growth of the medical educational system was modelled on institutional examples of best practice.

Rapid progress towards these goals followed on the publication of his report, and the main engine of progress was closure of those medical schools that most obviously failed to meet Flexner’s ideals. By 1920 the number of medical schools had almost halved down to 85 with an immediate improvement in the average standard of medical education (Bowman 2004). Like any effective modernization, Flexner’s imposed costs, such as the domination of US medicine by scientifically trained hospital specialists,
and the closure of all three medical schools for women and five of the seven medical schools for African Americans (Hiatt 1999). Nevertheless, judged by its own objectives, the modernization of US medical education was a resounding success.

The features which enabled this successful short-sharp-shock modernization are instructive. First, there was the rapidity and radical nature of reform. Second, there existed a surplus of ‘output’ from the medical school system, an overproduction of doctors such that many found it hard to make a living. As Flexner (1910) said, ‘the country needs fewer and better doctors… the way to get them better is to produce fewer’. And third, there was a consensus among significant interest groups concerning the aims of reform, including the identities of the best and worst medical schools.

The NHS subsistence economy

Why then has short-sharp-shock institutional reform not been carried through in the NHS – despite often being threatened and sometimes initiated (Klein 1995b)? The probable reason is that, although radical modernization is usually more effective in achieving its objectives than drip-drip incremental reforms, the strategy carries the significant disadvantage that long-term gains in quality and efficiency can only be attained via a short-term but significant reduction in output.

This is seen in economic reform when effective anti-inflationary policies or measures to enhance productivity lead to a short-term recession – even when they offer substantial long-term benefits (Sargent 1982). Re-organization of systems uses resources in the short term and this usually means that a resource-freeing phase of simplification precedes the phase of increasing adaptive complexity. Modernization is therefore easiest in growing systems with a surplus of output in which the costs of re-organization can be paid from growth and in which the surplus will cover the temporary decline in output.

However, the NHS has no significant surplus of health services – in effect, it is a ‘subsistence economy’ with zero spare capacity. This is because the NHS aims to produce exactly the amount of health care ‘needed’ (according to the calculations of health politicians, managers and other planners) and no more than what is needed. Any accidental surplus of health care provision is taken to be evidence of inefficiency, and subjected to downward cost-cutting pressure. The consequence is that the NHS produces only just enough output to satisfy public health demands. Indeed, much managerial effort is put into demand management, with campaigns to reduce the public’s use of services, and tight regulation over expenditures such as prescribing and capital equipment.

If anything, it seems that public demand for health services is indeed considerably greater than the NHS can provide. After all, most subsistence economies throughout history (and currently in much of the developing world) have operated at average levels of output which produced endemic semi-starvation with fairly frequent episodes of actual starvation (Gellner 1988). The NHS subsistence economy means that health care shortages can be precipitated by trivial blips in demand such as a harsh winter or an influenza epidemic.

The clear implication is that short-sharp-shock modernization of the NHS, although it would probably be effective, is unfeasible because the short-term reduction in the ‘output’ of health services that would be produced by radical re-organization would precipitate severe shortages of health services: a health care famine.

Modernizing UK health care

The spectre of health care famine has probably been a major factor in preventing any effective programme of NHS modernization over the past few decades. Because the NHS subsistence economy rules out short-sharp-shock reform, by default, successive governments have been forced to regulate the NHS by an almost continuous drip-drip of regulatory initiatives, which has had the unintended effect of politicizing health care.

Effective modernization would be possible only if the provision of UK health services could first grow to generate a significant surplus capacity – or at least a surplus in those critical areas most vulnerable to health care famine (e.g. acute and emergency services). However, implementing the phase of pre-modernization health care expansion is not easy –
because the unmodernized NHS has very probably accumulated considerable inefficiencies over the past few decades of inadequate reforms – and these inefficiencies have no doubt been exaggerated further by the unrelenting effects of politicization. This appears to be confirmed by recent UK attempts to expand NHS provision of services by large injections of funding. It appears that while a great deal of extra money has gone into the NHS, little in the way of extra services has (so far) come out of the other end (The Economist 2003). It seems plausible that extra investment is failing to provide ‘good value for money’ – which weakens the national economy.

Another possible approach would be to expand health services without expanding the NHS. New forms of health care provision could be encouraged in the critical areas most vulnerable to ‘famine’. Such services might be designed to be rapidly sensitive to demand, for example, by using (means-tested-subsidized) item-of-service forms of payment. Such a rapid expansion of health care provision would entail substantially increasing the numbers of health care personnel, which could only occur by the large-scale importation of a migrant health care workforce – and indeed this may already be happening in the UK. Alternatively, or in addition, elective and non-vital services might be transferred out of the NHS and into the private sector (presumably with a need-based system of subsidies for the poor). At the same time the NHS could re-direct its resources into the critical areas of need. This would continue until there was a significant surplus of acute and emergency services in the NHS. Only when this point of surplus has been reached could the NHS effectively be modernized.

When a surplus of health services has been generated, then this will be the appropriate time for a Flexner-like ‘cull’ of less efficient and lower-quality health care providers, accompanied by incentives for the more efficient and higher-quality providers to use their spare capacity to expand and take up the slack. Following modernization the health care system would immediately have a higher average quality and efficiency; and further growth of health services would come from expansion of the best institutions and practices.

Short-sharp-shock modernization entails an acute phase of rationalization and re-structuring. In principle this ‘culling’ could be carried out by government (e.g. on the basis of performance indicators and ‘league tables’) but in practice this seldom happens – probably because regulators are unwilling to diminish their power and influence by widespread closure of institutions. For example, compared with closing hospitals, it would be very straightforward to close underperforming and unpopular schools, yet this is very seldom carried out (instead these schools are expensively propped up by extra funding and new management teams). In practice, selection seems to be carried out most effectively when there is no specific individual made responsible for it, and when outcomes such as institutional extinction are an outcome of competition rather than bureaucratic diktat.

A modernizing ‘cull’ of ineffective or inefficient providers in the NHS might best be achieved by competition for client-linked funding. The model could be the history of university expansion in the USA (Trow 1991, 2003) in which a surplus of diverse, autonomous institutions competed for student fees. The higher education system which evolved is highly sensitive to the demands of students, and contains a vast diversity of provision – including highly accessible vocational training, elite liberal arts colleges and the best research universities in the world.

If a diverse health service that is similarly sensitive to patient demands is required, then health care funding (including subsidies) should be channelled mainly via patients – instead of being allocated directly to institutions by the decisions of politicians and civil servants.

References


