

Northumbria Research Link

Citation: Thomas, Rod and van Zwanenberg, Nigel (2005) Stafford Beer in memoriam – ‘an argument of change’ three decades on. *Kybernetes. The International Journal of Systems & Cybernetics*, 34 (5). pp. 637-651. ISSN 0368-492X

Published by: Emerald

URL: <http://dx.doi.org/10.1108/03684920510595337>
<<http://dx.doi.org/10.1108/03684920510595337>>

This version was downloaded from Northumbria Research Link:
<http://nrl.northumbria.ac.uk/id/eprint/9859/>

Northumbria University has developed Northumbria Research Link (NRL) to enable users to access the University's research output. Copyright © and moral rights for items on NRL are retained by the individual author(s) and/or other copyright owners. Single copies of full items can be reproduced, displayed or performed, and given to third parties in any format or medium for personal research or study, educational, or not-for-profit purposes without prior permission or charge, provided the authors, title and full bibliographic details are given, as well as a hyperlink and/or URL to the original metadata page. The content must not be changed in any way. Full items must not be sold commercially in any format or medium without formal permission of the copyright holder. The full policy is available online: <http://nrl.northumbria.ac.uk/policies.html>

This document may differ from the final, published version of the research and has been made available online in accordance with publisher policies. To read and/or cite from the published version of the research, please visit the publisher's website (a subscription may be required.)



**Northumbria
University**
NEWCASTLE



UniversityLibrary

Stafford Beer in memoriam – ‘An argument of change’ three decades on.

Rod Thomas and Nigel van Zwanenberg

Final Version of a Paper Published in *Kybernetes. The International Journal of Systems & Cybernetics*. 34(5): pp637-651.

Keywords Cybernetics, Management, United Kingdom, NHS, Strategy, Information

Paper Type Conceptual Paper

Purpose

This paper is written in memory of the late Stafford Beer. The paper engages with only one dimension of the whole man: Stafford Beer as the diagnostician and prognostician of the social conditions that he so keenly observed.

Design/methodology/approach

The paper revisits a talk that Stafford Beer gave, over three decades ago, to administrators of the UK National Health Service (NHS). It uses the content of the talk, entitled “Health and Quiet Breathing”, to diagnose the problems that have been encountered in the development of NHS information management strategies. The paper concludes with some brief personal recollections of Stafford Beer as a friend and as a teacher.

Findings

The paper finds Stafford Beer’s managerial cybernetics to be a useful tool in understanding many of the problems that have beset NHS information

management strategies: lack of operational research, problems in the commodification of information, financial scandal, and bureaucracy. In its examination of these issues, the paper recognises Stafford Beer's status as a legatee of not only Norbert Wiener, but also of the great philosophers.

Value

The paper demonstrates how the problem-orientation of Stafford Beer's managerial cybernetics continues to be fresh and relevant to today's society and provides a brief portrait of him both as a friend and as a teacher.

Introduction

Stafford Beer rejected many of the commonplace categories that are used to typify our world. That this was so is surely suggested by a recent feature about him in Great Britain's Guardian newspaper. Its otherwise lucid correspondent described Stafford as "part scientist, part management guru, part social and political theorist" (Beckett, 2003). We smiled when we read this ungainly label - for it was easy to visualise a disconcertedly raised eyebrow on a heavily bearded face. The face quipped: "And what of the system that would emerge from the coupling of such parts?"

These opening remarks serve to illustrate the difficulties in remembering the whole of Stafford Beer by means of black ink on white paper. Indeed, Stafford, as we remember him, was not particularly fond of labels and regarded most 'either / or' dichotomies as constitutionally suspect. In offering a description of himself, he would have perhaps been more inclined to cite an ancient Vedantic teaching: "that action is entirely the outcome of all the modes of nature's attributes". Indeed, perhaps there is only one commonly held category that could apply to Stafford Beer without dint of a crude distortion: Stafford was a philosopher and his love of wisdom was a powerful one.

Yet Stafford Beer's philosophy was not in the least bound to ivory tower contemplation. In every sense his was a practical philosophy to be tested by direct involvement in the world of affairs. Moreover, the problem that confronts us, in writing to his memory, is encapsulated in one of his many

maxims: “Ashby’s law of requisite variety will always assert itself”.

Thankfully, the man himself provides some much needed variety amplification:

I have read that I have the reputation of being a prophet whose oracles come true. It is nonsense... What I do is study the systems which society has underwritten and in which firms are embedded (Beer, 1975a,p289).

This quotation is from *Platform for Change*; a book that is perhaps the best testament of the extent to which Stafford Beer carried his philosophy into the world of affairs. For the book was a challenge to “reading habits, thinking habits, running-the-world habits” (Beer, 1975b,p2). It was partly comprised of fifteen Arguments of Change - fifteen different statements and public lectures that sought to relate cybernetics to fifteen different, but specific, social contexts or problems. The statements ranged from an inaugural presidential address to the Operational Research Society of Great Britain, to a memorial lecture to a Police college, to a presentation to a committee of the House of Representatives of the United States of America. Many years later Beer described this project thus:

...the whole year was devoted to designing different statements, specific to their audiences, which between them would be a vehicle for a more encompassing intention. This was to express the relevance of the new science of cybernetics to holism, and to propose it as a new worldview. Insofar as key cybernetic interests were concerned, to illustrate them in all those different contexts should buttress the thinking (Beer, 2000,p565).

It follows that this paper’s requisite variety of remembrance manifests itself in an engagement with only one dimension of the whole man: Stafford Beer as the diagnostician and prognostician of the social conditions that he so keenly observed. In particular, it will examine the context of just one Argument of

Change: the British National Health Service (Beer, 1975c). The intention is to relate the Argument, which Stafford entitled “Health and Quiet Breathing”, to the events that have unfolded in the thirty-three intervening years. In establishing that relation, the paper discusses Stafford Beer’s development of a managerial cybernetics of organization and recognises his status as an intellectual legatee of not only Norbert Wiener, but also the great philosophers. The paper concludes with some brief personal recollections of Stafford Beer as a friend and teacher.

An Argument of Change: Health and Quiet Breathing

Health and Quiet Breathing was a lunchtime talk, delivered in 1970, to administrators of the British National Health Service (NHS). It addressed the problems that Stafford believed confronted the organization at that time, the remedies that he believed to be available, and the possibilities that he held the future to hold. The transcript of this talk is full strength Beer bottled for all time - amusing and ebullient, but also devastating in its criticism and courageous in its visionary ambition (Beer, 1975c). As this paper will seek to demonstrate, three decades on it reads like a haunting presentiment of future events. Indeed, it was not only ahead of its time three decades ago - in some respects it is ahead of the present time.

Its initial suggestion was that the problems of management are always multi-faceted and as such they should be studied in the context of the system generating them. Any such study should deploy science - the “codified

understanding of how things are and how things work; insight made rigorous; the general educed from particulars” (Beer, 1975c,p87). The application of science to the complex problems of management represents the essential meaning of operational research (OR). As such OR relies upon the construction of a model, open to experimentation, which stands as a surrogate for the system in which the problem is perceived to reside.

These opening definitions led Beer to observe that there was scope to apply OR at every level of NHS organization: “...the queue... someone should make it clear that you spell antenatal with an ‘e’ not an ‘i’ ” (1975c,p89). But also that “the big model of the entire health service should and could be built” using “cybernetic models of (the) various ways in which viable systems come to be organized” (1975c,p93). This latent potential for beneficial change was contrasted with Beer’s own diagnosis of the 1970 NHS:

... three monolithic blocks: the hospitals, general practices, and local health authorities... an introverted organization, preoccupied with its own antecedents, its internal power struggles, its levels of status, its costs and its wages, which solves its management problems in equations of political factors and psychological stress (Beer, 1975c,pp88-89).

As a consequence, Beer proposed that the purpose of the NHS was all but lost from view; his own opinion was proffered in these terms:

... my suggestion would be that we think of a health service as regulative. We look for a stable society in which factors affecting healthiness are under control... Society is a very large system made up of individual people... we ought to start with them. Now we can define the health status of every person - if only by calling him ill or not ill; but of course a good recording system would offer a much richer account than this. At the moment, such an account could exist, but does not - because of organizational fragmentation and archaic methods of recording and storing facts (Beer, 1975c,p88).

It was on this basis that Stafford offered his vision:

In... this lies a beginning for the reformulation of the way that hospitals are run - a reformulation based on the notion that what happens in a hospital is all about information and its transformations. If you could study the hospital wearing spectacles which allowed you to see the movement of information and nothing else, you would understand both the medicine and the administration - and just how the two fail to interact... You would trace the loops of information that culminated in a very ill patient crawling out of bed to a public telephone - to ring up the hospital and ask how he was... you would mark the information filters that substitute 'as well as expected' for actual information. You would trace the information network by which nurses and sisters know what to do for their patients (Beer, 1975c,pp91-92).

Hence, Stafford's vision for the NHS, over thirty years ago, was of an integrated total system, modelled on, what for him, were the invariant structural mechanisms of viable systems and managed with the assistance of operational research. As such, he foresaw that such an integrated system would revolve around access to an electronic health record that was patient based.

This vision had an acknowledged concern:

I am fully aware of the problems of confidentiality posed by effective and consolidated electronic files. They can and will be solved (Beer, 1975c,p91).

The Course of NHS History: A Nightmare in Several Acts

The course of history, over the decades since Beer's talk, has not been kind to the British NHS. This is particularly so of the NHS in England, where the development and implementation of information management and technology (IM&T) strategies has become a form of nightmare in several acts.

Act One began in 1983, some thirteen years after *Health and Quiet Breathing*, with the Griffiths' inquiry into NHS organization and management (Griffiths, 1983). However, in contrast to Beer's call for operational research, the cybernetic modelling of NHS organizational structure, and the importance that he placed on patient based records, the Griffiths' inquiry recommended

the appointment of a hierarchy of general managers throughout the NHS. At the hospital level, these managers were to be supported by an information system to be called '*Management Budgeting*'. The aim of *Management Budgeting* was:

... to provide an unsophisticated system in which workload related budgets covering financial and manpower allocations and full overhead costs are closely related to workable service objectives and against which performance and progress can be measured (Pratt, 1986,p62).

This objective was subsequently pursued in a variety of guises throughout the late 1980s and 1990s. Act Two involved the commitment of £445 million in support of the '*Resource Management Initiative*' (DHSS, 1986; HMT, 1990;1991;1992). Within hospitals, this initiative pursued the development of a 'case mix' management system: a software application capable of classifying patients into medically meaningful, iso-resource groups for budgeting purposes. The difficulties experienced in delivering such an application, at any English hospital, led to Act Three: the '*Hospital Information Support Systems Initiative*'. This was piloted, with mixed success, primarily at just three hospitals - but to the cost of £56 million (NAO, 1996). Around the same time, the Wessex Regional Health Authority independently pursued a similar initiative. This project resulted in the loss of £43m amidst allegations of conflicting interests and managerial impropriety (PAC, 1993).

Nevertheless, the failure of these initiatives to deliver robust, case mix sensitive data on hospital costs and activity did nothing to stop Act Four unfolding: the negotiation of contracts throughout the 1990s in support of the

NHS internal market in secondary health care (DoH, 1989). This was an attempt by the then Conservative government to introduce a quasi-market model into NHS health care delivery. It involved NHS 'self governing trust' hospitals contracting to supply health care to publicly funded NHS health authorities and general practitioners (GPs); the latter being responsible for the purchase of such care on behalf of patients.

The internal market mechanism became widely acknowledged as a disaster for the NHS. In the absence of data that related the costs of care to the clinical complexity of any given case, the information on which the quasi-contracts were negotiated was hopelessly inadequate (Seng et al, 1993). For instance, the crude average specialty cost per episode of care - on which contracts were necessarily negotiated in the absence of case mix sensitive data - could result in spectacular shortfalls in revenue for NHS hospitals. This could happen whenever the case mix severity of their referred patients changed unexpectedly. This resulted in bed closures, for instance, at the Wessex Neurological Centre, England (Neil-Dwyer, 1992). Elsewhere, the reliance on crude average-cost pricing opened significant opportunities for gaming behaviour on the part of the purchaser bodies in the NHS. In particular, GPs were able to 'cream skim' simple consultative and surgical procedures from their local hospitals by conducting them 'in-house'. One reported example was the increased ratio of complex to simple dermatological cases that were referred by a large GP practice to the capital intensive Queen's Medical Centre

in Nottingham, England. This undermined the financial viability of the hospital's dermatological service, which had absorbed its capital costs into its 'market prices' on the assumption that the volume and case mix of its referrals would remain stable (Millard, 1992).

These catastrophic failures in information management were integral to the development of Act Five: the spending of a further £152m by the central management of the English NHS in support of a strategy to meet the administrative requirements of the NHS internal market (NHSE, 1992; NAO, 1999). A key component of this expenditure came to be investigated by auditors, amidst allegations of financial malpractice and conflicts of interest (NAO, 1998). Elsewhere, a clearing system was established that centralised the settlement of all payments to hospitals arising from patient referrals under the internal market. The clearing system subsequently fed its data, on all of the secondary health care episodes in England, to a central database. These systems spurred the nation's medical profession into open protest during 1995 and 1996, because of concerns about their security, and their failure to adequately consider the protection of patient confidentiality (Anderson, 1996;1998).

The Present NHS Strategy: The Past Revisited (In Part)

The formulation of an understanding of such chronic mis-management should be of considerable importance to an organization that is, by almost any conceivable measure, the United Kingdom's largest organization and also one

that has created 24,000 general management posts since 1983 (DoH, 2000). Indeed, one notable feature of the troubled history that we have briefly outlined is illustrated by these very statistics - the emphasis that was placed on 'managing' the NHS by appointing a hierarchy of general managers. Once appointed, the emphasis passed to attempts to collect data on the *cost* of health care activities. Hence, in sharp contrast to the thrust of Beer's talk, there was very little emphasis placed on organizing and informing the delivery of health care by doctors and nurses.

Indeed, it was against this backdrop that the current NHS information management strategy, *Information for Health* (NHSE, 1998), was formulated under the overview of a Labour government. In his foreword to the strategy, the then Secretary of State for Health observed that: "Up to now the use of IT in the NHS has not been a success story. Far from it. Lots of money has been wasted" (Dobson, 1998). The perceived reasons for this were acknowledged by the strategy document itself:

... the previous strategy... was over-concerned with management information, and failed to address the real need of the NHS for information... The new strategy will be based on ...delivering the information required to support day-to-day clinical practice... Most NHS organisations depend on traditional paper based clinical records... The NHS will need to increase the pace of its take up of new information technology... The arguments for a move towards an electronic (health) record are compelling (NHSE, 1998,p15-24).

Clearly, not so compelling as to have been recognised in the twenty-eight intervening years since Stafford Beer's *Health & Quiet Breathing* address. Nevertheless, *Information for Health* initially exhibits a first rate systemic

sensibility. Indeed, the strategy explicitly recognises that IT should be deployed on a 'problem pull' rather than 'technology push' basis:

An information strategy for the NHS must be driven primarily by a careful and comprehensive analysis of the information needed to support service objectives... and not simply by the technical possibilities (NHSE, 1998,p13).

It is unfortunate that in other respects this lengthy document is left wanting - especially in comparison to the insightful brevity of *Health & Quiet Breathing*. Indeed, its request for an analysis of information needs is at the expense of the synthesis so clearly present in *Health & Quiet Breathing*. For instance, *Information for Health* fails to acknowledge the dearth of extant operational research into the adequacy of the communication channels that presently link health care professionals. This shortfall was identified by Smith and Preston (1996) amidst evidence that the problems with current communication channels are legion. Similarly, *Information for Health* fails to acknowledge the importance of basic event scheduling for the NHS - despite the manifest evidence that many NHS hospitals fail to utilise their beds and operating theatres efficiently (NAO, 1988; Audit Commission, 1992; Buchanan and Wilson, 1996; Boaden, et al 1999). Moreover, the strategy does not explore the contention that commonplace designs in computing and communication tools are inappropriate to the specialised ergonomics of the healthcare environment. For instance, the contention that personal computer based applications, with their origins in the office environment, do not serve the communication needs of more mobile healthcare workers at all well (Coiera, 1998).

On the Commodification of Information in the NHS

Stafford Beer acknowledged three mentors in many of his publications on the managerial cybernetics of organization: Norbert Wiener, Ross Ashby and Warren McCulloch. To Beer, this trinity represent the grandfathers of cybernetics (Beer 1981; 1994). It follows that the content of *Health & Quiet Breathing* is, at least in part, underwritten by Wiener's exploration of the relationship of information and its communication to the control of processes through time (Wiener, 1961). In essence, in a stochastic cosmos, there can be no management without information management - that was Wiener's legacy - that was also the observation of *Health & Quiet Breathing*. But what is the value of information? Is it a commodity that can be valued?

Such questions are of considerable importance to the NHS given the paradoxical insistence in *Information for Health* that NHS Trust hospitals compile a 'business case' in support of major IT investments (NHSE, 1998). Any such case would detail the costs and benefits of the investment proposal. On this basis, a project with a positive business case is approved by the central NHS management executive and the NHS Trust would be authorised to finance the project's investment costs by borrowing through privately financed loans that are repaid by public revenue allocations (DoH, 1999). But what are the financial benefits of improved information and communication flows in a public service NHS hospital? The NHS strategists would do well to consider Norbert Wiener:

What makes a thing a good commodity? Essentially that it can pass from hand to hand with the substantial retention of its value and that the pieces of this commodity should combine additively in the same way as the money that paid for them. The power to conserve itself is a very convenient property for a commodity to have... Information on the other hand, cannot be conserved easily... What has been said before may not be worth saying again... It is only independent information that is even approximately additive... derivative information is far from independent of what has gone before (Wiener, 1968,p102-104).

Hence, in economic terms, information has some strange characteristics. We cannot live without it, but once it is available it will prove difficult to control – the ‘consumption’ of information by one party does not preclude its consumption by another. Moreover, once some information is fully available no one is left wanting more of the same. In the vocabulary of neo classical economics, information cannot be viewed as a pure private good – rather it has many of the characteristics of a public good (Olson, 1965).

Moreover, throughout the 1990s, the managers of NHS Trust hospitals were partly held to account by the internal market mechanism - being required to achieve a target rate of financial return on their net assets (DoH, 1999). It follows that for an individual hospital, given the public good characteristics of information, there could be plenty of cash costs but no obvious cash benefits to be realised from an improved information management infrastructure. Indeed, there would, in all likelihood, have been financial disincentives at the local level to investing in the IM&T infrastructure that would have enabled the creation of an electronic health record - the very infrastructure that *Information for Health* championed.

Unfortunately, *Information for Health* fails to recognise these paradoxical difficulties except in an extremely limited sense. At one juncture, the strategy

highlights the nature of this problem in a brief discussion of how to finance the messaging costs of an NHS intranet called NHSnet:

... reluctance to fully exploit the NHSnet stems partly from... concerns across the NHS about the burden of messaging costs and the uneven distribution of costs and benefits between different parts of the service... A simple and pragmatic solution... would be to top-slice funding and central payment of the messaging costs of the net (NHSE, 1998,p54).

This begs the question as to why, on this specific issue, the problem of the value of information and the financing of its production and distribution is recognised, but the *general* difficulty is ignored.

On NHS Bureaucracy & Financial Scandal

The study of mechanisms in inanimate nature may be conducted as a scientific inquiry. As such it requires faith in the existence of an order of things - but it is an inquiry that is not contested by that order. In Wiener's terms:

To discover the secrets of nature requires a powerful and elaborate technique, but at least we can expect one thing - that as far as inanimate nature goes any step forward that we may make will not be countered by a change of policy by nature for the deliberate purpose of confusing and frustrating us... nature plays fair (Wiener, 1968,p163).

However, Wiener also recognised that the interaction of animate mechanisms - with opposing ends - might exhibit the characteristics of a contest. In Masani's terms:

... what are often accepted as inquiries or analyses are in reality steps and counter-steps of an ongoing invisible contest between different vested interests (Masani, 1997,p339).

Hence, on the one hand, a scientific inquiry into inanimate nature will have to surmount the dissipative effects on measurement of the natural noise that is generated by nature. But on the other hand, an inquiry into animate nature - for instance an enquiry into an administrative system - may have to also surmount

the additional noise that is intentionally generated by human agents in pursuit of an opposing end (Masani, 1997).

For the late P.R. Masani, human noise in administration merely reflects the nature of what he called 'Homo- peccator' (i.e. sinful man). It is, at least in part, born of traits in the human make-up: "conceit, avarice and jealousy... dishonesty, hypocrisy, deceitfulness and treachery" (Masani, 1997,p340). The cybernetic implications of such 'human noise' are not easily unravelled, but for Masani, Homo peccator will act to limit the possible application of cybernetic thinking to a social organization like the NHS:

... administration is marred by teleological human noise... the execution of a policy will be distorted by the human noise within and without (the) system and... the eradication of this noise may involve contest (Masani, 1997, pp346-347).

Furthermore, Masani (1997, p353) claims that public service organisations may well contain a particular form of "noise atmosphere": that which is borne by bureaucratic structure and process. For Masani, the potential 'noise' of a bureaucracy is well exemplified by C. Northcote Parkinson's infamous satirical 'laws'. For example:

1. *The Rising Pyramid*. In a bureaucracy, work expands to fill the time available for its completion. This follows from the fact that both work and staff numbers can be artificially manufactured by internal minute writing and the exchange of memorandum (Parkinson, 1957).

2. *Expenditure Rises To Meet Income*. A publicly financed bureaucracy regards the public revenue as limitless and as such its expenditure rises eternally (Parkinson, 1960).

3. *Delay Is A Form Of Denial*. A bureaucracy will attempt to delay innovative proposals, precisely because they are innovative, beyond the life or career span of the would-be reformer (Parkinson, 1970).

It would appear that the nightmare years of NHS IM&T strategy failure have been rich in both teleological human noise and bureaucratic noise. In support of this claim, one might cite the creation of a pyramid of 24,000 managers between 1983 and 2000 (DoH, 2000), the catalogue of multi-million pound financial scandals (PAC 1993; NAO, 1996; NAO, 1998), and the withering criticism of the bureaucratic ineptitude of the central NHS management executive (Anderson, 1998).

Let us move this paper towards its conclusion by asking an important question, namely, what can science say about effective business organization when it has to speak against the deafening noise of homo peccator and bureaucracy?

Diagnosing the NHS System

Stafford Beer's prolific writings on the application of cybernetics to management and enterprise addressed this question in a novel, but none the less powerful way. In this regard, we should look towards what lies behind a request in Beer's *Health & Quiet Breathing* talk - a request whose meaning

was, in all probability, something of a mystery to his audience at the time. This was the request for “cybernetic models of (the) various ways in which viable systems come to be organized” (Beer, 1975c,p93).

For Beer (1974;1975d;1985) cybernetics is the science of effective organization. An organization is a regulated mechanism; it must be or it would not be perceived by anyone as an organization. Yet the processes by which such organization is achieved are usually too complex and unintelligible to be fathomed by the outside observer. In the terminology of cybernetics, they are systems of enormous ‘variety’ and the organization is a ‘black box’ (Ashby, 1964; Beer 1979).

Nevertheless, one observable feature of some organizations is their capacity to go ‘on and on’. For instance, consider ‘the organized general practice of medicine’ or ‘the organized hospital practice of surgery and medicine’. Several English hospitals display an organized continuity that can be traced back centuries. The doctors change, the nurses change, the patients come and go, but the ‘box’ goes on and on. In cybernetic terms, its organization is regulated by feedback and homeostatic systems of enormous complexity (Ashby, 1964; Beer, 1979). These systems seek to supply requisite variety to the regulatory task; to do so they must seek to absorb variety with variety (Ashby, 1964; Beer, 1979).

One potent force for such stability in the practice of medicine must surely derive from the belief and knowledge structures, the value systems and the

conventions of the professional groups involved. In the face of limited perturbations, these mechanisms will enable a continued coherence - no matter who is involved. Indeed, in the face of a medical emergency, it is a good thing for all involved that it is sheer professionalism that cybernetically 'takes control'. However, there may be a cybernetic downside to the maintenance of such stability (Beer, 1974;1975e). This is the downside that the NHS has been slipping down in its nightmare years of continued information management failure.

First, a black box may well be perceived, from a metasystemic vantage point, to be a mere part of a wider system. The box itself will recognise such relationships. Indeed, a string of esoteric boxes may be involved with one another. However, they are unlikely to collaborate and manage such relationships in the synoptic terms and interests of the higher order metasystem. On the contrary, they will act on the terms that maintain their own integrity (Beer, 1975e). *This is an important origin of many of the communication and scheduling problems that characterise the NHS.*

A second difficulty is that the very stability of the box may result in its procedures becoming antiquated when considered from the perspective of a metasystem. For instance, the box is unlikely to exploit a technological advance that makes its own mode of organization obsolete. Hence, whilst the box may be perceived as an operational part of a higher order system, if that system lacks adequate material embodiment, it will be unable to restructure

itself in its own interest. Indeed, it may well have no existence other than through the eye of a beholder (Beer, 1975e). *It is by this process that aspects of the NHS become 'unmodern' and Government policy makers subsequently champion an agenda of public service 'modernisation'.*

Third, the would-be reformer, frustrated by the opacity of the box and lacking sympathy with the perceived nature of its output, may well attempt to make it more transparent or attempt to alter the content of its inputs. But the very complexity of the box means that it cannot easily be made transparent. Similarly, the very stability of the box allows it to adjust to perturbations - but without adjusting its cherished output. Further reforms might ensue, with an even greater range and frequency. Critically, as Beer (1974;1975e) was fond of noting, if their size and rate of arrival exceeds the ability of the box to adjust to them, then instability, protestations, crisis, and quite possibly collapse will ensue. *It is partly by this process that the NHS came to waste several hundred million pounds in the pursuit of an oxymoron: "...an unsophisticated system in which workload related budgets... are closely related to workable service objectives and against which progress and performance can be measured."* *It is also by this process that the NHS management executive became engaged in a dispute with its own medical employees over the confidentiality of patient records.*

On the Recurring Need for a NHS Meta System

For Stafford Beer (1975b;1997), such difficulties are cybernetically inevitable if problems are approached in the absence of a cybernetic sensibility. Indeed, one of the central components of the thesis derived in *Platform for Change* was that in the absence of such a sensibility, both business and society would be characterised by logically un-decidable propositions. These will generate contested arguments that cannot be satisfactorily resolved without recourse to a logically higher order metasystem that embodies a suitably endorsed regulatory model and employs a suitable metalanguage (Beer, 1975b). For Beer (1975b;1979), Masani's notions of "teleological human noise" or "bureaucratic noise" can only be addressed if they are understood in the language of a logically higher-order metasystem. Consequently, for Beer, scientific inquiry appears to once again become possible, but only in a diagnostic sense via a 'principle of completion from without' (Beer, 1966;1967;1979,1985). Moreover, for Beer (1974;1975d), a most important principle for such a completion is the criterion that systems survive in both the short and the long term through learning, adaptation and evolution. This is the criterion that they are viable (Beer, 1979). Such a criterion can be applied recursively, extending itself over the many dimensions of formal and informal organization:

As long as oppression and freedom are seen solely as normative values, the outcome is determined by self-interest. Then we get polarization, and people will fight to the death for a prospect which is in either case not viable. But if we raise our eyes to the higher level of the total system in designing... controls, and use the viability criterion as the balance point,

liberty must be a computable function of effectiveness for any total system whose objectives are known (Beer, 1975d, p428).

Of course, the possibility of *designing* a metasystem depends on systemic purpose as perceived and the establishment of generalised cybernetic laws that govern viability (Beer, 1974). If such laws are established, it follows that in principle, in so far as survival is concerned, it is not any person's or organization's liberty that stands to be lost by the filtration of Masani's notions of human teleological and/or bureaucratic noise. It is merely the license to denature the very system in which such liberty is exercised (Beer, 1975d; 1975f). It follows from this that a 'Parkinsonian' bureaucracy, whose only perceived output is the maintenance of its own bureaucratic organization, would not constitute such a metasystem. On the contrary, such a bureaucracy may well be diagnosed as parasitic to the logically lower order system; flourishing at its expense (Beer, 1974;1979).

For some, this is the *bête noir* of management cybernetics and the reason why Stafford Beer attracted so many polemics (e.g. Adams, 1973; Rivett, 1977). Yet as Beer helpfully points out:

The meta system must make some intervention, and should make only that degree of intervention that is required to maintain cohesiveness in a viable system... Freedom is in principle a computable function of systemic purpose as perceived. That is the explosive conclusion. It is explosive precisely because it sounds heartless, whereas the dear question of freedom is full of heart. The trouble seems to be that people do not like to believe that any matter of passion for them could possibly be bound by scientific rules, forgetting that the passion itself is limited by the rules of their own physiological capability to endure it (Beer, 1979,p158).

Beer's epic exploration of *how* systems are viable is well chronicled (Beer, 1979;1981;1985;1989;2000). It is beyond the scope of this paper to fully

recount his *Viable System Model*. However, an essential feature is the principle of recursiveness. This always enables the notion of a metasystem to be explored. Moreover, the model elucidates how the problem of requisite variety in regulation can be explored and how a metasystem must be structured if the criterion of viability is to be upheld. A major feature is the cybernetic requirement that each metasystem embodies a model of the system that it seeks to regulate.

In the NHS, the notion of the metasystem appears to be continually uncharted and under explored. This applies to the multiple recursive levels of the many dimensions of the total health care system (Beer, 1985). *How else could an organization continually fail to communicate and schedule its own cross boundary processes? How else could an organization come to be in dispute with its own staff over questions of patient privacy and confidentiality? How else could multiple projects end in financial scandal?*

The Great Philosophers

It pays to reflect on the magnitude of the issues that Stafford Beer sought to address. “For the subject of our argument is no trifling matter. It is the question of the right manner of life” (Plato, s352).

Stafford Beer’s managerial cybernetics raised questions of governance in the tradition of Plato’s *Republic* and Hobbe’s *Leviathan*. But such was the compass of his learning and his commitment to holism, that Beer perceived possible answers and invariant principles where others saw only abstruse

research. For instance, the importance that Beer placed on the diagnosis of social problems in terms of the absence of logically higher order meta-systems gathered inspiration from Bertrand Russell's research into the logical paradoxes generated by "the assemblage of all classes that are not members of themselves" (Russell, 1920,p136). It is reported that Russell declared that he knew of only six people who had read all of this research (Strathern, 2001). One is left wondering if Stafford Beer was one of those six people.

Conclusion

We have written this paper in memory of the late Stafford Beer. For those familiar with the man and his works that intention may well be recognised as overly ambitious. For two things can surely be said about Beer: he thought for himself and he thought about big issues. For those reasons, this paper's requisite variety of remembrance has manifested itself in remembering only one dimension of Stafford - his status as a constructive social critic. At one level, we have sought to demonstrate how his problem-orientation continues to be fresh and relevant to today's society. But at another level we have sought, in a minor way, to recount Beer's status not only as the founding father of the managerial cybernetics of organization, but also as a legatee of the great philosophers. For how else can one represent a man who used cybernetics to so rigorously explore the concept of human freedom?

Epilogue: Some Personal Recollections

In October 1998, Stafford Beer accepted an invitation to become a Visiting Professor to our University. It was as a result of this that we came to know him. In the years between 1998 and 2001, Stafford made many visits to our University to teach in his Socratic mode.

The Socratic symposium was a forum that suited Stafford intellectually, pedagogically and physically. The only entry condition he set was that participants should come with a specific question in hand and also have some familiarity with any of the wide canon of his works – including his poetry. At the symposia, Stafford gave generously of his ideas and he relished the chance to explain and extend his thoughts in debate. On the other hand, he did expect that discussants would at least start from a position of some knowledge. The debates typically ranged widely. The domains were as likely to include biology as theology, politics as business systems, philosophy as law. Similarly, Stafford was as anxious to expose what he considered to be the foibles of current political leaders as he was to reminisce on his work in Chile for President Salvador Allende. Stafford's deep hurt from this period was obvious, but never worn on his sleeve. His concern always turned towards the present or the future. For him the past provided an opportunity to learn from the course of history – as long as it was interpreted with a systemic sensibility. In this regard, the obvious failures of Western societies did not escape Stafford's ironic commentary.

The make-up of the participants at the symposia mirrored the attention that managerial cybernetics has received in what should be its homeland of University Business Schools. Those who grasped the opportunity to debate with Stafford were typically enthusiasts, drawn from a wide range of disciplines inside and outside business, recent graduates and research students, keen to find out more. There were also a number of senior managers, from both inside and outside the University, who appreciated the compass of Beer's strategic vision and who met with him where and when they could.

As a man, we found him to be an inspiration. When Stafford considered himself to be available, he was always keen to engage with people of all ages and all backgrounds, generous with both his time and his knowledge. Stafford was especially fond of recounting his memories of the founding figures of cybernetics – he had known Norbert Wiener, Warren McCulloch and Ross Ashby and was anxious that future generations read their works and celebrate their memory. Such discussions would often roll on into the early hours – later in the bar. On the other hand, Stafford liked time to himself – to pause, to meditate and to read the daily newspaper. That was often how we would find him, sat quietly in a grand hotel's lounge overlooking the Sea: *Rari nautae in gurgite vasto*.

References

Adams, J. (1973), "Chile: Everything under control", *Science for People*, Vol 21, pp.4-6.

- Anderson, R.J. (1996), *Security in Clinical Information Systems*, British Medical Association, London.
- Anderson, R.J. (1998), "Safety and privacy in clinical information systems", in Lenaghan, J. (Ed.), *Rethinking IT and Health*, Institute for Public Policy Research, London, pp.139-160.
- Ashby, W.R. (1964), *An Introduction to Cybernetics*, Methuen, London.
- Audit Commission (1992), *Lying in Wait: The Use of Medical Beds in the NHS*, HMSO, London.
- Beckett, A. (2003), "How an inventor from West Byfleet revolutionized Chile – Santiago dreaming", *The Guardian*, G2, 8 September, pp.1-3.
- Beer, S. (1966), *Decision and Control - The Meaning of Operational Research and Management Cybernetics*, Wiley, Chichester.
- Beer, S. (1967), *Cybernetics and Management*, Second Edition, English University Press, London.
- Beer, S. (1974), *Designing Freedom*, Wiley, Chichester.
- Beer, S. (1975a), "Dynamics of decision", in *Platform for Change*, Wiley, Chichester, pp.277-297.
- Beer, S. (1975b), *Platform for Change*, Wiley, Chichester.
- Beer, S. (1975c), "Health and quiet breathing", in *Platform for Change*, Wiley, Chichester, pp.85-93.
- Beer, S. (1975d), "Fanfare for effective freedom - Cybernetic praxis in government", in *Platform for Change*, Wiley, Chichester, pp.421-452.
- Beer, S. (1975e), "The cybernetic cytoblast: management itself", in *Platform for Change*, Wiley, Chichester, pp.133-151.
- Beer, S. (1975f), "The liberty machine", in *Platform for Change*, Wiley, Chichester, pp.307-321.
- Beer, S. (1979), *The Heart of Enterprise*, Wiley, Chichester.
- Beer, S. (1981), *Brain of the Firm*, Second Edition, Wiley, Chichester.
- Beer, S. (1985), *Diagnosing the System for Organizations*, Wiley, Chichester.
- Beer, S. (1989), "The viable system model: its provenance, development, methodology and pathology", in Espejo, R. and Harnden, R. (Ed.), *The Viable System Model - Interpretations and applications of Stafford Beer's VSM*, Wiley, Chichester.
- Beer, S. (1994), "Knowing Norbert", *Kybernetes*. Vol 23 No6/7, pp.17-20.
- Beer, S. (1997) "The culpablist error: a calculus of ethics for a systemic world", *Systems Practice*, Vol 10 No4, pp.365-380.

- Beer, S. (2000), "Ten pints of Beer - The rationale of Stafford Beer's cybernetic books (1959-1994) - Discussion with Stafford Beer", *Kybernetes*, Vol 29 No 5/6, pp.558-572.
- Boaden, R., Proudlove, N. and Wilson, M. (1999), "An exploratory study of bed management", *Journal of Management in Medicine*, Vol 13 No 4, pp.234-250.
- Buchanan, D. and Wilson, B. (1996), "Re-engineering operating theatres: the perspective assessed", *Journal of Management in Medicine*, Vol 10 No 4, pp. 57-74.
- Coiera, E. (1998), "Four myths about the information revolution in healthcare", in Lenaghan, J. (Ed.), *Rethinking IT and Health*, Institute for Public Policy Research, London.
- Department of Health (1989), *Working for Patients*, Cm 555, HMSO, London.
- Department of Health (1999), *The NHS Finance Manual*, Department of Health, London.
- Department of Health (2000), *The NHS Plan*, Cm 4818, HMSO, London.
- Department of Health and Social Security (1986), *Health Services Management - Resource Management (Management Budgeting) in Health Authorities*, Health Notice HN(86)34, DHSS, London.
- Dobson, F. (1998), "Foreword by the Secretary of State for Health", in NHS Executive, (Ed.), *Information for Health - An Information Strategy for the Modern NHS 1998-2005 - A National Strategy for Local Implementation*, Department of Health Publications, Wetherby.
- Griffiths, R. (1983), "Recommendations on the effective use of manpower and related resources" (Chairman R. Griffiths), DHSS, London.
- HM Treasury (1990), *The Government's Expenditure Plans, 1990-1991 to 1992-93*, Department of Health, HMSO, London.
- HM Treasury (1991), *The Government's Expenditure Plans, 1991-1992 to 1993-94*, Department of Health, HMSO, London.
- HM Treasury (1992), *The Government's Expenditure Plans, 1992-1993 to 1993-94*, Department of Health, HMSO, London.
- Masani, P.R. (1997), "Homo peccator in public administration", *Kybernetes*, Vol 26 No3, pp.334-366.
- Millard, L. (1992) "Budget holding at Calverton", *British Medical Journal*. Vol 304, pp.1695-1696.
- National Audit Office (1988), *Use of Operating Theatres in the NHS*, HC 143, HMSO, London.

- National Audit Office (1996), *The NHS Executive: The Hospital Information Support Systems Initiative*, HC 332, HMSO, London.
- National Audit Office (1998), *NHS Executive: The Purchase of the Read Codes and the Management of the NHS Centre for Coding and Classification*, HC 607, HMSO, London.
- National Audit Office (1999), *The 1992 and 1998 Information Management & Technology Strategies of the NHS Executive*, HC 371, HMSO, London.
- Neil-Dwyer, G. (1992), "Beware shifts in case mix under block contracts", *British Medical Journal*, Vol 304, pp.1383-1384.
- NHS Executive (1992), *Getting Better with Information - An Information Management and Technology Strategy for the NHS*, Department of Health Publications, Wetherby.
- NHS Executive (1998), *Information for Health - An Information Strategy for the Modern NHS 1998-2005 - A National Strategy for Local Implementation*, Department of Health Publications, Wetherby.
- Olson, M. (1965), *The Logic of Collective Action: Public Goods and the Theory of Groups*, University Press, Harvard.
- Parkinson, C.N. (1957), *Parkinson's Law or The Pursuit of Progress*, John Murray, London.
- Parkinson, C.N. (1960), *The Law and the Profits*, John Murray, London.
- Parkinson, C.N. (1970), *The Law of Delay*, John Murray, London.
- Plato (1935), *The Republic*, Translated by Lindsay, A.D., Everyman Library Edition, J. Dent, London.
- Pratt, R. (1986) "Management budgeting in the English Demonstration Districts" in *Management Budgeting in the NHS*, Health Service Manpower Review, Keele, pp.62-83.
- Public Accounts Committee (1993), *Wessex Regional Health Authority Regional Information Systems Plan, Sixty Third Report*, House of Commons Papers 658, Session 1992/1993, London.
- Rivett, P. (1977), "The case for cybernetics - A critical appreciation", *European Journal of Operational Research*, Vol 1 No 1, pp.33-37.
- Russell, B. (1920) *Introduction to Mathematical Philosophy*, Second Edition, Allen & Unwin, London.
- Seng, C., Lessof, L. and McKee, M. (1993), "Who's on the fiddle", *Health Service Journal*, 7 January, pp16-17.

Smith, A.J. and Preston, D. (1996), "Communication between professional groups in an NHS trust hospital", *Journal of Management in Medicine*, Vol 10 No 2, pp.31-39.

Strathern, P. (2001) *Bertrand Russell in 90 minutes*, Ivan Dee, Chicago.

Wiener, N. (1961), *Cybernetics or Control and Communication in the Animal and the Machine*, Second Edition, MIT Press, Cambridge MA.

Wiener, N. (1968), *The Human Use of Human Beings - Cybernetics and Society*, Sphere Books Edition, Sphere Books, London.