The Decline of Health Services in Alberta

The triumph of professional over real management

Converge
Consulting Group
People • Process • Performance

Converge Consulting Group Inc.

Mailing: 2617-20 Street SW
Calgary, Alberta
Canada
T2T 4Z4

Phone: 403.266.0061
Web: www.converge-group.com
www.converge-group.net

The Decline of Health Services in Alberta

The triumph of 'professional' over 'real' management

Robert M. Gerst
Partner, Converge Consulting Group Inc.

Abstract

The past 20 years have seen a steady decline in the provision of health services to Albertans. Waiting times for surgeries, diagnostic services and emergency room visits is increasing, costs are escalating and quality of care has remained constant at best. A day doesn't go by without the health system being labelled in 'crisis'. All this, despite extensive efforts by health care management experts and government to 'fix' the problem. Predictably, these efforts at improvement have made the problem worse.

The Alberta health care system is an instructive example of the negative effects of the command and control thinking of professional management. Four false assumptions of this thinking are explored: (i) centralization provides for greater levels of control and coordination, (ii) economies of scale always yield lower unit costs, (iii) increasing utilization improves efficiency and (iv) numerical goals and targets provide direction and motivation to people. How these assumptions have guided efforts to 'fix the system, the devastating consequences and how these contrast with the systems thinking of real or practicing management are examined.

Acknowledgements:

Thanks to the staff and people working within the Alberta health system that contributed so much to this paper. You know who you are. This paper is dedicated to you.

Thanks to Bruce Harries and Leanne Couves of Improvement Associates who took the time to review and contribute to this paper. Their modifications and suggestions to the topic of targets were especially helpful.

The Decline of Health Services in Alberta

The triumph of 'professional' over 'real' management

The Alberta health care system has been described as *in crisis* for the better part of twenty years. The government, with support from health care economists, consultants, and efficiency experts, has focused on fixing it - reducing costs (or at least stemming the increases) and improving access without sacrificing quality of care.

Health care is a publically funded provincial responsibility in Canada. The Government of Alberta through the Ministry of Health and Wellness, has responsibility for essentially the entire system - hospitals, doctors fees, laboratories & services, clinics, staffing levels, care standards, public health and labor contracts. It is thus well positioned to address systemic issues and effect improvement.[1]

Despite this broad scope and scale of influence, efforts at improvement have been a failure. Costs continue to rise unaffected by a burgeoning cost control bureaucracy seen as largely ineffective[2]. System access, is deteriorating with wait times in hospital emergency recently described as nearing "*potential catastrophic collapse*".[3]

Not surprisingly, public confidence in the system is eroding and health care is the dominant political issue in the province. Recently, another in a long string of major "overhauls" of the health care system was announced[4]. It will not help. It will make things worse.

The failure of command and control management thinking

The huge, long-range losses caused by this style of management have led us into decline. Most people imagine that the present style of management has always existed, and is a fixture. Actually, it is a modern invention - a prison created by the way in which people interact.[5]

This is because the failure to improve health care system performance is not simply a result of doing the wrong things. The wrong things are being done because of management, or more precisely, because of command and control thinking that characterizes the professional management model.[6] Command and control is based on naive assumptions and crude improvement heuristics that drive counterproductive actions degrading system and organizational performance. Improvement will not come about so long as the

[1] There is much debate concerning the precise proportions that are publically versus privately funded, however, universal health care is an important characteristic of the Canadian system.

[2] Recently, the Alberta Auditor General criticized Alberta Health Service (AHS) for misallocating, or simply forgetting to record, a billion dollars worth of expenses last fiscal year. See: Alberta auditor criticizes Health Services. CBC News: http://www.cbc.ca/canada/calgary/story/2010/10/26/edmonton-auditor-general-alberta-health-services.html

[3] Dr. Paul Parks, the Alberta Medical Association's section president of emergency medicine as quoted in the Calgary Herald October 23, 2010 in. *Hospital waits hit historic worst in Calgary*.

[4] See: "Alberta eyes 'people first' overhaul of health care." The Globe & Mail, Sept. 16, 2010.

[5] Deming, Edwards W., The New Economics, Massachusetts Institute of Technology, Center for Advanced Engineering Study, Cambridge, MA, 1994 p.xv

[6] See: Seddon, John, Freedom from Command and Control, Productivity Press, New York, N.Y., 2005 for an in depth discussion on command and control.

command and control dominates the thinking of the Alberta health care system leadership.

Professional management is characterized by the belief that work can and should be organized into separate components with 'planning and decision making' assigned to management, while 'doing the work' is assigned to those lower on the organizational ladder.[7] Organizations are seen as top-down hierarchies where 'thinking' professionals are separated from, well, everyone else.[8]

Separating management from the real, value-adding work creates a leadership disconnected from reality. What management knows it gets through reports, dashboards and studies (control). Rather than going to see for one's self (*genchi genbutsu* in Lean Thinking), the professional manager orders another cost analysis to *get the facts*. What comes back is evidence, filtered, spun and otherwise corrupted furthering the disconnect.

This *garbage-in,* is regurgitated out, as orders, instructions, decisions, plans, goals, budgets and targets (command). Management's role is ensuring people do what they have been told to do. This requires ever increasing control through audits, inspections, performance reviews, studies and variance reports creating an organizational obsession with reporting and information systems. Vast amounts of descriptive data on costs, financial figures and operations are complied, summarized and analyzed in the belief that this information is useful for understanding the causes of performance problems and supporting rational and effective improvement actions. They aren't.

This is because in business (or science or anywhere else), in making conclusions supporting a rational basis for action, only two possibilities exist:

(i) make inferences or take action on the objects within a frame (enumerative) or

(ii) make inferences and take action on the cause system (analytic).[9]

The enumerative study is concerned with describing and judging results and is properly limited to these purposes. The analytic study is concerned with the cause system producing these results and is, therefore, a prerequisite for rational improvement action.

The cost, budget and operational status reports, benchmarking studies and financial analyses comprising the informational lifeline of the professional manager, are enumerative. While useful in describing conditions, circumstances and detailing the depth and scope of issues, they are incapable of making valid inferences concerning the causes of performance issues. This is true for the 20 years of worth of studies, whitepapers and reports conducted on the Alberta health care system. These have provided accurate descriptions of conditions and problems that management and the public can rely upon, but no matter how much information or descriptive accuracy is gained as a result, they cannot rationally inform management as to *why* things are the way they are, identify the root causes of performance problems nor define rational improvement actions.

Professional management confuses cause and effect. An enumerative study may identify a cost escalation problem that is attacked by a *squeeze down on costs of materials purchased, including the costs of tools, machinery, maintenance, supplies.*[10] These efforts are useless because costs are *results*, the effect of a complex system of causes.

[7] See: Mintzberg, Henry. Mintzberg on Management, The Free Press, New York, NY, 1989. and Managing, Berrett-Koehler, San Francisco, CA, 2009 for the distinction between management as a profession and management as a practice.

[8] Arising from the work of Frederick Taylor (Scientific Management, Taylorism) and Alfred P. Sloan,(the man who built General Motors) this belief has pretensions of a prescriptive management and organizational theory. It is taught as prescriptive theory in business schools and many managers hold to the idea today.

[9] The first formal distinction between the two types of studies was made by Edwards Deming. See: Deming, Edwards, W. On Probability as a Basis for Action. The American Statistician, November 1975, Vol. 29, No. 4 It is also discussed in Deming's other writings including Out of the Crisis and The New Economics.

[10] W. Edwards Deming, Out of the Crisis. Massachusetts Institute of Technology, Center for Advanced Engineering Study, Cambridge Mass. 1992. p. 123

Reducing costs requires attacking the drivers or causes of those costs. *"Costs are not causes. Take action on causes."*[11] This is true only so long as there is a law of cause and effect. Until that law is repealed, results can no more be influenced directly than health professionals can reduce the flu by legislative fiat.

Enumerative studies may give the illusion of a high-order analytic understanding of a problem by providing data in increasing detail. Yet, costs are costs and both are results, no matter how many ways they are classified or to what precision they are calculated. To say, for example, that a cost problem is due to the high cost of material purchases, says nothing about *why* the costs of either are high. Splitting costs into numerous buckets with greater precision and detail provides no more understanding of cost drivers, than sorting stones on a beach by color and size provides an understanding of how the stones got there.[12] Descriptions of conditions provides no knowledge, nor a rational basis for action.

Answering *how the stones got there*, the *why* question, requires inferences about the cause and effect system and this demands analytic understanding and systems thinking. This is a dynamic view of the organization or system focusing on the value stream, system response to demand and the comings and goings of the workflow. With this understanding comes explanation and prediction based on rational theory drawn from evidence, including past conditions, interaction effects and always accompanied by some risk of being wrong.[13] Understanding the organization this way is a characteristic of the *real* or *practicing* manager.

Management is a practice - a hands on activity concerned with running things in the real world. You can't do that reading reports on the 42th floor of head office. Practicing managers live in the heart and soul (*gemba* in Lean Thinking) of the business. Even in an office job, the practicing manager frequently gets out from behind the desk to go see what is going on where the real work is done.

The former Chief Engineer at Toyota, and the man behind the Toyota Production System (TPS), Taiichi Ohno, is said to have insisted that any engineer proposing a change to the production line, get out from behind the desk and stand in a small circle drawn in chalk beside the affected area of the line. If the engineer still thought his proposal a good one after standing and watching how things actually work for a full shift, it was acted upon.

Real managers know that engineering plans (or any other plans) drawn up in isolation at head office don't amount to much. Theory must be confronted by the operating reality of the shop floor or the hospital emergency room. It is a necessary part of understanding the dynamics of a process and the organization.

Professional management approaches system and organizational change as a project, driven by design specifications drafted in an ivory tower. The practicing manager knows better. Change is a continuous process of improvement. It is the messy business of trying things out, running pilots, conducting informal field experiments and otherwise actively testing ideas to see how they work in the real world. This is the basis of an analytic understanding. It is only by testing things out that we can make valid inferences about the cause and effect system, identify the root causes of performance problems and develop rational, pragmatic solutions.

Real managers can't conceive of doing it any other way. Professional managers can't understand why you would do that. The belief that a business can be run solely on the basis of reports, statistics, financial statements, charts, graphs, computer scorecards and dashboards is a

11 W. Edwards Deming

[12] This stones on the beach metaphor was first used by Charles Darwin to distinguish the two types of scientific studies and in defending evolution and the work of geologists in his day.

[13] Being *wrong* is a crime to the professional manager, one reason why so much effort is spent finding errors and attaching responsibility and accountability (blame). Where professional management and command and control thinking takes hold, a culture of fear and intimidation necessarily results. To the practicing manager, being wrong is part of the job, a necessary consequence of making decisions and taking action. Risks of error can be reduced, but the only rational way of doing so is by gaining an analytic understanding of the cause and effect system.

delusion promoted in elite business schools and ingrained in North American management thinking. Yes, these things may be necessary, but they are not sufficient. To be successful, somebody, somewhere, must actually *do* something. Real managers run things. Professional managers read reports.

Exhibit: Comparing professional and practicing management characteristics[14]

	Characteristic	Professional Management	Practicing Management
Thinking/Perspective	Management Model/Thinking	Command and control	Systems
	Organizational Perspective	Top-down, hierarchy	Outside-in, system
	Role of Management	Act on the people	Act on the system
	Ethos	Ideological, rules, control	Pragmatic, scientific, experiments, learning
	Location	42th floor	Gemba, heart and soul of the operation
	Information processing / understanding	Enumerative, descriptive	Analytic, explanatory/predictive
Action/Methods	Primary activity	Reading reports, writing directions	Running the business, meeting people
	Measurement	Targets, standards, related to budgets (enumerative)	Capability, variation, related to purpose (analytic)
	Improvement Strategy	Focus on results	Focus on causes
	Change	Is a project	Is a process
	Decision Making	Separated from the work	Integrated with the work

[14]This table is based on a similar table in: Seddon, John. Freedom From Command & Control, Productivity Press, New York, New York, 2005. p. xiv. I have made a number of additions and changes to the original that I believe is consistent with the original intent.

	Characteristic	Professional Management	Practicing Management
Relationships	Attitude to customers	Contractual, max. profit	Partnership, max. value
	Attitude to employees	Contractual, performance review	Partnership, team contribution
	Attitude to suppliers	Contractual, competitive bid	Partnership, mutual profit

A simple example of disconnected management

In an effort to reduce costs, the health system in Alberta recently standardized on the type of scissors purchased for clinical care. A competitive bid vendor selection process managed by a centralized purchasing bureaucracy was used to acquire scissors in large volumes from a single supplier. The intent was to gain from economies of scale and bulk purchase discounts reducing the per unit purchase cost of scissors. This effort was successful. Good thing too, as these new cheaper scissors are incapable of cutting through bandages more than a few times before becoming dull and unusable, greatly increasing the volume of scissor purchases and overall costs.

The health system has yet to figure out why the demand for scissors is increasing, but recently congratulated itself for achieving the unit cost reductions - *just in the nick of time*. Meanwhile, frustrated front line and supervisory staff share this latest inside joke on managerial competence while shaking their heads in disbelief that anyone would be buying this stuff (literally and figuratively).

Running the business on the numbers alone, centralizing control and purchasing decisions and relying on competitive bid to drive down costs, creates a management that knows the cost of everything and the value of nothing. The value in a pair of clinical scissors lies in the experienced hands that use them. This value rarely gets beyond the front lines but the costs, captured on management reports, make it all the way to the 42nd floor of head office.

Early efforts at improving health care in Alberta, measuring & rewarding organizational performance

. . .everyone in the organization must understand the aim of the system, and how to direct his efforts toward it. Everyone must understand the damage and loss to the whole organization from a team that seeks to become a selfish, independent, profit centre.[15]

In: *Appraising Organizational Performance: Why mess up people one at a time when you can ruin an entire organization?*[16], I focused on early efforts by hospital efficiency experts, health care economists, professional managers and consultants of various sorts to improve the efficiency of Alberta's health care system and of hospitals specifically. The key mechanism in this drive for improved efficiency was the Hospital Performance Index (HPI) - a masterwork of command and control thinking that sought to improve performance through a sophisticated performance measurement and incentive system.

The HPI was an index number (where 100 represented the norm or average) produced by a regression model that analyzed data

[15] Deming, Edwards, The New Economics, Massachusetts Institute of Technology, Center for Advanced Engineering Study, Cambridge, MA, 1994 p.50

[16] Gerst, Robert M., Appraising Organization Performance: Why mess up people one at a time when you can ruin an entire organization?, Quality Progress, February 1995 (Volume 28, No. 2)

concerning the number, type and cost of every service delivered by hospitals across the province. A hospital with an HPI above 100, say 105, was thought to be 5% more efficient than the norm. Hospitals with an HPI below 100, were thought to be relatively inefficient. The HPI was also used to drive hospital budget allocations. Good performing hospitals received budget increases. Poor performing hospitals had their budgets reduced.

The idea was to bring a more private sector and competitive business attitude to Alberta hospitals by establishing a 'quasi-competitive' market for budget dollars.[17] It was believed this pay-for-performance approach would drive improvements in operational efficiency, cost and service quality. Professional managers and efficiency experts thought it was a great idea.[18]

As any practicing manager could have predicted, it was a disaster. *Appraising Organizational Performance* showed how these improvement efforts had the opposite effects to those intended – producing declines in operational efficiency and patient service while escalating costs.

One way this occurred was by adding variation into the system. Differences in hospital performance, as measured by the HPI, were largely due to the random fluctuations or common cause variation existing in all systems and processes. This is the systemic/statistical noise arising from all the little things that come together in different ways, in different amounts and at different times, producing different results. This is commonly referred to as random chance.

Random chance doesn't exist in the command and control thinking of professional management. The HPI assumed that any measured differences among hospitals or year to year results were of special or assignable cause - that is, attributable to the unique operating characteristics of specific hospital at a specific time. An HPI of 105 was assumed attributable to the unique operating characteristics or a particular hospital rather than what it really was, luck.

So while appearing rational, the HPI distributed financial rewards and punishments to hospitals in response to random chance. This is equivalent to allocating resources by coin toss (heads you win, tails you lose). By treating common cause variation as if it were special, management was tampering, increasing the amount of variation in the system and degrading performance.

For example, the combination of any number of small, unrelated factors increases the demand for services at the Crowsnest Pass hospital sending its HPI upward. Next year, Crowsnest Pass receives a budget increase because of its high HPI in the previous year, but the same random factors that previously increased demand now drive it downward. The combination of increased budget and lower demand produces a precipitous drop in HPI.

Back and forth it went, with hospital HPI's rising and falling chaotically with ever increasing variation and the government literally throwing money around in response. Swings in performance, from efficiency superstar one year, to inefficient pariah the next (and then back again), raised no concerns with hospital efficiency experts nor government administrators. Most people and certainly experienced managers know that such dramatic organizational change doesn't happen so quickly - for better or worse. But this was text book professional management -- little thinking beyond the numbers. If the HPI says Crowsnest Pass Hospital was a winner last year and a loser this year, it must be true *because the (HPI) numbers don't lie*[19].

[17] For a deeper discussion concerning the idea of establishing 'quasi-markets' in the public sector, see: Seddon, John, Systems Thinking in the Public Sector, Triarchy Press, Axminster, U.K. 1988.

[18] One reason for this may have been that the HPI was a giant make-work project for hospital efficiency experts and consultants. This, because as an index, the HPI guaranteed that in any year, roughly half of all Alberta hospitals would be classified as inefficient and would thus require the help of hospital efficiency experts and consultants. Ironically, the same experts that had a hand in creating the HPI.

[19] Anyone believing this should read: Darrell Huff in *How to Lie with Statistics*, (W. W. Norton & Company, New York, NY, 1954), especially the chapters *Much Ado about Practically Nothing* and *The Semi Attached Figure*. The lie here is selling the differences in HPI scores as important differences in the operating practices of Alberta hospitals

Converge Consulting Group Inc.
www.converge-group.com
403 266 0061

While the lack of HPI logic escaped the attention of those managing the system, it didn't escape the attention of those managing hospitals. Competition among hospitals gave rise to various forms of cheating to improve HPI scores. Among these, readmitting patients for a related set of conditions. An emergency patient arrives with a broken collar bone and a fractured leg. Admit the patient, fix the leg, discharge the patient and then readmit for the collar bone. Fix it and then discharge again. A reasonable approach when hospitals are rewarded (in part) for the number of admittances. Did you hear him sniffle? Readmit for the flu.

The dysfunctional behavior reached a climax when the General Hospital, branded the *biggest loser* in the local media, served notice that it would no longer accept terminally ill patients from other hospitals. Specializing in palliative care, the General concluded that cooperating with other hospitals was bad for business. Keeping dying people alive longer, and in greater comfort, produced bad HPI scores - scores that rewarded hospitals for quick turnover. In palliative care, turnover means one thing and few were in a hurry to get there. This eventually degenerated into public bickering as hospitals pointed out each other's HPI inflating indiscretions in the media.

In the end, the Provincial Auditor General investigated the actions of all concerned and within a year, the HPI was dead (talk about irony). Nevertheless the damage was done and driven by the command and control thinking of professional management, the system was now on a long path of performance decline.[20]

Command and control thinking takes hold

This path is marked by numerous reports, studies, white papers, frameworks, strategies, and reorganizations, all of which were intended to 'fix' the system. For all their variety and numbers, these studies paved the road to hell with their good intentions by relying on command and control thinking.

The first of these efforts, in the wake of the HPI emphasized the need for improved coordination - not surprising given the level of infighting the HPI itself had produced. The Health Plan Coordination Project (HPCP) applied command and control thinking to the problem, emphasizing greater centralization in planning and decision making, consolidating functions and building a hierarchical command and control structure. Improving coordination, operating performance and reducing costs, were to be achieved by demolishing the 200 independent health care Boards (including the 100 hospital Boards) and restructuring them into 17 regional health authorities. At the time, it represented the largest restructuring of a health care system in Canada.

This wasn't the only demolishing going on. As independent health care organizations were centralized into regional authorities, attention was directed on 'redundant', underperforming facilities and assets as measured by utilization levels. Hospitals were demolished, medical centers decommissioned and sold, while smaller operations were moved to larger operating units, in an effort to improve efficiency through enhanced asset utilization.

None of this produced improvement. Costs and wait times escalated as did public pressure for change. In 2002, acknowledging the failure of regionalization, the Alberta Government initiated another comprehensive review of the system. Rather than admitting to the possibility of having made an error, the study concluded that centralization and consolidation had simply not gone far enough. So, in 2003, health regions were again consolidated, reducing their number from 17 to 9. Similar reductions of redundant health care capacity also took place.

---

rather than what they were, random fluctuations in the myriad of factors that can affect hospital performance. A lie compounded by the ranking of results, a long treasured tactic of statistical snake oil salesman to make insignificant results look important. Examples of this lie abound in rankings of schools and educational institutions, performance appraisals, benchmarking studies, employee engagement research and *best places to work for* reports.

[20] Recently, Alberta Health Services has discussed a special, incentive plan that will instill greater private sector competitiveness among hospitals. The details are still to be worked out but the sense of déjà vu is overwhelming. A new disaster is in the making.

Nevertheless, the pattern of deteriorating performance continued. It would only take five more years for another round of organizational studies to recommend more of the same - this time merging the 9 remaining health regions into a single "super board" responsible for all health care delivery in the province. The resulting organization, Alberta Health Services (AHS), is a behemoth with over 90,000 employees (excluding contracted employees).

Still, the performance of the system hasn't improved. The evidence strongly suggests that these improvement efforts have devastated the efficiency, effectiveness and flexibility of the system. How can managers and leaders push a system through periods of consolidation, centralization and asset rationalization, experience declines in performance, and then do it all over again (and then again and then again) without so much as questioning the basic strategy or underlying assumptions? At what point is Einstein's observation heeded: *A good definition of insanity is doing the same thing but expecting different results.*[21]

The insanity lies in the command and control thinking of professional management, where assumptions concerning performance improvement hold sway over empirical results - a triumph of ideological dogma over practical knowledge. Four command and control assumptions have held sway with significant impact on the Alberta health care experience.

1. Improved coordination (and performance) comes with centralized command and control. Coordination requires a rigid hierarchical structure that centralizes decision making & direction setting at the top of the structure while controlling people through direct supervision, budgets and management reports.

2. Cost reductions come through economies of scale. Make it bigger, increase lot size, consolidate functions, and costs will drop.

3. Increased efficiency comes through improved utilization. Reducing spare or redundant capacity increases utilization and, therefore, improves efficiency and lowers costs.

4. Results come through setting targets and measuring performance. Set performance targets, measure performance against these targets and hold people accountable for achieving them.

Each of these and their consequences on the Alberta health system is examined.

Destroying coordination and performance through centralized command and control

"*It's management's job to direct the efforts of all components of the system toward the aim of the system.*"[22] Doing so is the task of coordination. Efficient, effective operations and a smooth flow of work demands coordination among hospitals, clinics, laboratories, family practitioners, surgeons, nurses, administrators, and insurance providers. The question for management is not whether coordination is required, but rather how it is to be achieved. Mintzberg identifies three basic strategies[23].

Direct supervision, achieves coordination by having formal communications and decisions concerning direction, task assignment, feedback on progress, and necessary adjustments run through a centralized position (boss). This position becomes the focal point of coordination, communication and decision making. Direct supervision is the professional manager's idea of coordination - a command & control approach that emphasizes the importance and role of hierarchy.[24] It is also the basic coordination strategy at work in the

[21] Attributed. First appearance in print was Rita Marie Brown

[22] Deming, Edwards, The New Economics, Massachusetts Institute of Technology, Centre for Advanced Engineering Study, 1994 p. 50

[23] Mintzberg, Henry, Structure in Fives: Designing Effective Organizations, Prentice Hall, Englewood Cliffs, New Jersey, 1992

[24] Seddon, John. Freedom from Command & Control. Rethinking Management for Lean Service. Productivity Press, New York, New York 2005

Alberta health care system, evidenced by the increasing centralization of the system.

Mutual adjustment, achieves coordination through informal communication among organizational units. It is a highly decentralized approach metaphorically resembling an open market. No one unit or individual dictates the direction for the others. Rather, direction and coordination evolve in response to changing circumstances and conditions of the larger system but constrained by a shared objective or aim. To the professional manager, coordination through mutual adjustment looks like no coordination. To the practicing manager, mutual adjustment may be the best that can be achieved given circumstances and often provides the grease allowing other coordination strategies to function.

Standardization, achieves coordination by structuring elements in the work environment or system so that coordination and control is 'hard-wired' into work activity. Three forms of standardization include:[25]

- Standardization of work processes, achieving coordination by defining how the work will get done and by whom.
- Standardization of outputs, achieving coordination by specifying the results expected of different organizational units.
- Standardization of input skills and knowledge, achieving coordination through training and education.

This hardwiring reduces the need for coordination by reducing the number of coordinating decisions that need to be made (the coordination problem) and provides control by constraining outcomes.

System complexity, variation and the coordination problem.

The performance of these coordination strategies is understood in terms of the amount of system variety (variation) each places upon a manager. The greater the system variety, the more work and degree of difficulty to achieve a level of coordination and control over operations.

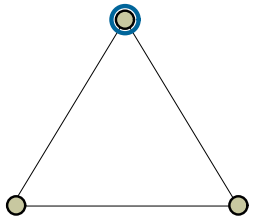
Consider coordinating the efforts of a three person department. To keep things simple, assume coordination focuses on the relationships among department members, who is getting along with whom. With three people there are 64 possible system states.[26] This represents the size of the coordination problem for the manager.

Increasing system complexity, the size of the organization, exponentially increases the size of the coordination problem. In a seven person department, again when concerned only with who is getting along with whom, the size of the coordination problem is equal to 2^{42} or 4,398,046,511,104. The amount of coordination effort is now plainly beyond the direct supervisory capacity of any single individual. Pretending otherwise quickly overwhelms coordinating and control positions in the hierarchy. They become management system bottlenecks, starving the system of the very coordinating efforts and decisions it needs to function.

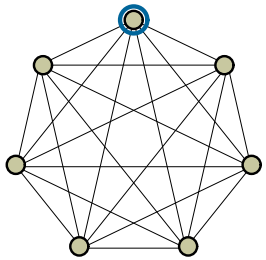
[25] Mintzberg, Henry, Structure in Fives: Designing Effective Organizations, Prentice Hall, Englewood Cliffs, New Jersey, 1992 In later work, Mintzberg would add a fourth form of standardization, Standardization of norms.

[26] For those interested in the math, the formula is $System\ States = r^{(n\times(n-1))}$ where *r* is the possible number of relations between two objects and *n* is the number of objects or system complexity. In this case *r* = 2 since A can get along with B or not get along with B and *n* equals three since we have three people.

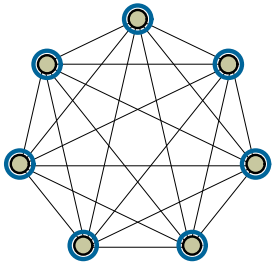
System complexity, variation and coordination strategies



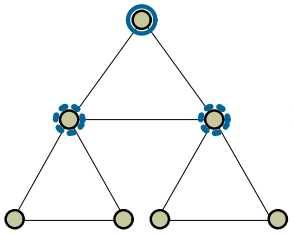
Complexity: 3 Units
Coordination Strategy: Direct Supervision
Variation to be Managed: 64
Variation per Manager: 64



Complexity: 7 Units
Coordination Strategy: Direct Supervision
Variation to be Managed: 4,398,046,511,104
Variation per Manager: 4,398,046,511,104



Complexity: 7 Units
Coordination Strategy: Mutual Adjustment
Variation to be Managed: 4,398,046,511,104
Variation per Manager: 628,292,358,729



Complexity: 7 Units
Coordination Strategy: Standardization
Variation to be Managed: 192 to 262,144
Variation per Manager: 64 to 262,144

Coordination through mutual adjustment reduces the amount coordinating effort required by any one component, by dividing the variation among the number of system components, spreading responsibility. It also increases flexibility and responsiveness as no one component acts as a constraint on the overall system. If one area becomes clogged, the others keep on working, often adjusting themselves in response and avoiding the bottleneck constraints that plague direct supervision.

Mutual adjustment works best when task ambiguity of the various components is high but where the overall aim of the system is shared. Highly innovative product development teams are an example.

Unlike direct supervision or mutual adjustment, standardization strategies work by reducing the amount of variation (the amount of coordinating work to be done). This is accomplished by building coordinating mechanisms into the system or work environment itself, essentially reorganizing the relations among components of the system. There are different ways to depict and calculate the benefits, depending upon the type and mix of standardization strategies used, but no matter how this is done, the variation and, therefore, the amount of system effort required to coordinate and control activities, is substantially reduced.

The power of standardization is evidenced by firms like Toyota. Centralized command and control providing direction, coordinating decisions and exerting control to each component in the system are replaced with a kanban process where system components coordinate production with one another through a standardized system of communication and authorizations, reducing coordination effort, variation and waste. Significant headway in productivity, cost reduction and process efficiency is made by leveraging the advantages of standardization in just this way.

Moving coordination and control from a centralized position or function and embedding it as a standardized component hard wired into the operational environment is, "*an aspect of the Japanese production techniques that is truly revolutionary . . . Rather than simply reacting to such things as machine set up times, vendor deliveries, quality problems, production schedules, and so forth, they*

have worked proactively to shape the environment. By doing this, they have consciously made their manufacturing systems ***easier to manage***.[27] This is a lesson that has been learned and applied globally by, for example, those pursuing Lean.

The command and control crisis cycle.

A reliance on direct supervision as a coordinating strategy, as emphasized in command and control thinking, produces a recognizable and repeated cycle of system crises.

1. Build organization structure on the command and control model using direct supervision as a coordination strategy.

2. Begin operating. Variation happens. Variation always happens in the form of decisions needing to be made and managerial demands for the information needed to make them.

3. Coordinating communications and actions become backlogged. Cycle times on decisions grow, control variances increase and the management system becomes clogged.

4. Command and control capacity is added. Accountants, auditors, inspectors and analysts, are hired to provide the needed capacity and provide the necessary oversight through increased levels of direct supervision, centralization, audits, inspections, standards and performance targets.

5. Things get back to normal. The added capacity reduces backlogs and the system convinces itself that the situation is under control. Everyone breathes a sigh of relief.

6. Go back to step 1.

The cycle is repeated until the system collapses under the weight of wasteful coordinating mechanisms added in step 4. This weight is commonly reflected as:

- increases in the ratio of head office staff to operations staff, (separating the thinking from the doing)
- increases in the number of audits, reviews, inspections and reports required by head office, (to demonstrate the work is being done in the manner prescribed),
- increases in the lead time required for management decision making (because of the increasing management system congestion).

The command and control crisis cycle occurs for three reasons.

Direct supervision is reactionary and slow. Management must wait for something to go wrong, and wait again to receive a report about it, before taking action. Coordination through mutual adjustment will see corrective action taken faster. Better yet, a proactive strategy like standardization, reduces the chances that something goes wrong in the first place.

Direct supervision is a constraint to management throughput and productivity. Having information flow through a single, centralized point overwhelms the position creating a backlog of coordinating decisions. This results in delays to production, waste and inefficiency making management itself, part of the problem.

Command and control thinking doesn't understand the nature of control. Professional management equates control with oversight, using direct supervision to check on employees, auditors to inspect the work performed and so on. However, you can't inspect quality into a product or service. Consider a baseball metaphor. The catcher calls for a particular pitch, say a fastball. The pitch is made, the batter holds the swing and the catcher receives the ball. The umpire makes the call as a ball or a strike. Where is the control?

To professional management, the control system lies with the umpire because the umpire 'inspects' the pitch and makes the call. To the practicing manager, the control lies in the training, experience and ability of the pitcher, because it is the pitcher, that ultimately 'controls' the ball. Real control is not in the ability to measure something after the fact, it is in the ability to influence something

[27] Wallace J. Hopp and Mark L. Spearman, Factory Physics, Irwin, 1996, p. 153 (emphasis added)

before the fact. If you have any doubts, compare the salaries of major league umpires and pitchers.

Effective coordination and control is not measured by how quickly errors are identified and fixed nor in how quickly coordinating decisions are made. It's measured in how few errors occur and how infrequently coordinating decisions are required. The greater the level of direct supervision, the less effective coordination and control.

Coordination and Control coordination strategies in Alberta Health Care

Increasing hierarchical centralization in the Alberta health system gives the appearance of increased coordination and control. It is an illusion, better understood as evidence of a lack of effective, standardized, coordinating and control mechanisms contributing to a twenty year history of *command and control crisis cycles*. Up to the introduction of the HPI, the 200 independent hospitals and health care organizations in Alberta operated successfully, largely through a coordinating strategy of mutual adjustment and standardization.

This effective coordination strategy was seen as a lack of control by professional management that sought to correct the situation through the HPI, promoting cost reduction through inter-organizational competition. Supporting these efforts were standard command and control tools such as budgetary performance measurement, target setting, and financial incentives.

The ensuing disaster led to centralizing and consolidating the 200 health care organizations into 17 regions. Removing redundancies and increasing coordination and control through a strategy of direct supervision gave the appearance improving conditions and people breathed a sigh of relief. These appearances were illusionary. Root causes of the coordination problem went unaddressed and the new coordination and control mechanisms added complexity and effort to the coordination task generating a whole new round of crises, each worst than the last.

Each iteration of the cycle was comprised of various enumerative studies calling for increased coordination through greater centralization and direct supervision over subordinate components of the system. Each of these iterations produced declines in system performance and new crises of increasing severity ultimately bringing the system to where it stands today - as one mega *super board* in a crisis anew and of similar size.

In practice, all organizations use a mix of coordination mechanisms. Even in the smallest of direct supervisory environments, employees will occasionally talk to one another to work out coordinating details (mutual adjustment). This is certainly true of the Alberta health care system. It did not, and indeed could not, rely entirely on a direct supervisory strategy - the system is just too big. So while direct supervision has comprised the basic coordinating strategy of AHS, a variety of standardization coordinating mechanisms are used as well.

What is interesting is the way these coordinating strategies are corrupted by the command and control thinking. This occurs when management mistrusts their own systems, inserting direct supervisory tools into standardized coordination processes, creating hurdles for the workflow, reducing efficiency, effectiveness and flexibility as a result.

Recently, AHS amended its hiring process requiring the CEO approval for every new hire, even when hiring into an existing position with budget approval. The CEO cited this as part of a cost control strategy. Assume a 5% turnover rate in a system of 90,000 employees and it won't take long to realize the impossibility of the task - almost as impossible as expecting people to believe it is being done or done well. Hiring backlogs and staffing shortages quickly and predictably ensued. In nursing, medical units started operating outside of certification standards (that define minimum staffing levels), increasing staff burnout, turnover and of course, cost.

Systems (and people) have an interesting way of responding to these corrupting influences. AHS managers began hiring part-time contract staff, not subject to the same hiring scrutiny as full-time employees. Contract personnel don't appear on staffing counts or personnel budgets, largely going unnoticed further up the hierarchy. Ironically, the cost of contract staff tends to be higher than that for employees, further escalating costs.

Converge Consulting Group Inc.
www.converge-group.com
403 266 0061

Corruption of the budgeting process provides another example. AHS now requires all expenditures in excess of $500 to go through a formal capital expenditure review by Finance and a competitive bid process managed by the newly centralized and consolidated Purchasing function. This is done regardless of the signing authority of the manager responsible or whether the expenditure has already been budgeted for and approved. Not surprisingly, this has all but neutered decision making at AHS.

For example, an AHS subsidiary recently submitted 20 pages of documentation to Finance to replace a broken water softener worth about $2,000. The process was delayed as Finance demanded 30 additional pages of documentation and photographs proving the water softener was broken. The process took in excess of 4 months. No word on how accountants (or anyone else) can assess water softener functionality from a photograph. Meanwhile, harried staff at a continuing care facility served residents using paper plates and plastic cups increasing costs, the health risk to residents as well as threatening facility certification.

The level of centralized planning, decision-making and control has reached new levels of absurdity. At the time of writing, the Alberta government released a 5-year plan for the health care system. Among the recommendations:

Add 12 new treatment spaces to the emergency department at the Stollery Children's Hospital, plus a dedicated entrance and separate waiting room and triage desk for patients who are mobile.[28]

The provincial government and AHS hold this level of detail up as an example of the degree to which they have command and control over operations and costs. It is only evidence of the opposite. The waste in detailing the addition of 12 hospital beds (and a new entrance!) in a five year plan for a system with 90,000 employees, providing care to 3.7 million people, is almost unimaginable. It's as if the Board of Toyota was directly involved in the planning to build 20 Corollas more than expected over the next five years (and adding a new front door to my dealership down the street).

Employing economies of scale to maximize costs

In the Alberta health care system, big and bigger is always better. This pattern is reflected in the increasingly centralized, functionally consolidated structure as well as in the building of various *monuments* that now dominate the system landscape. Economies of scale and returns to specialization provide the rational.

Economies of scale are part and prescription of professional manager ideology. The prescription is clear, bigger is better. Productivity not what it should be? Scale-up the facility, increase the production run or lot size. Input costs too high? Buy in bulk. Pull human resources out of operating divisions and create one massive centralized and consolidated HR department with an enterprise scaled HRIS system to support it. Do the same for Purchasing, Finance, and Asset Management. Have a choice between several small IT systems, and one mega do-it-all, enterprise-wide behemoth? Always choose the later. Do the same when confronted with choices concerning machines, buildings or operations. Why? Economies of scale.

The bigger it is, the lower the unit costs. Economies of scale are found in:

- purchasing, where scale permits buying of material and services in quantities large enough to earn significant cost discounts,
- management, through returns to specialization where larger firms can develop levels of expertise in the conduct of management functions.
- finance, where scale, often acting as an indicator of lower risk, will permit the acquisition of capital at lower cost (interest rates),
- marketing, where the costs of advertising and other media efforts can be spread over larger geographic areas,
- operations/production, where scale takes advantages of returns in the production process itself, through a larger facility size, bigger machines, more advanced technology and the distribution

[28] Becoming the Best: Alberta's 5-Year Health Action Plan, Alberta Health and Wellness, November 2010. p. 6 http://www.health.alberta.ca/documents/Becoming-the-Best-2010.pdf

Converge Consulting Group Inc.
www.converge-group.com
403 266 0061

of facility and other capital costs over a greater number of work units (lowering the average per unit cost).

Nice in theory. But, *"In theory, there is no difference between theory and practice. In practice, there is".*[29] In other words, practicing managers know better. If the techniques of Lean production and organizations like Toyota, Honda and have taught us anything, it is that *bigger is better ain't necessarily so*. Smaller lot sizes, shorter production runs, using multiple smaller machines over one big one, all make a lie out of the bigger-is-better heuristic.

The smaller *may* be better argument is codified in Lean Thinking as - *No monuments*! Monuments, are really big inflexible things that are difficult to move, impossible to change and become dated quickly. In short, inflexible objects that don't respond to variation. Enterprise scaled software that makes process improvement an impossibility is but one example.

If, "*Fixed fortifications are monuments to the stupidity of man"* then the blind belief in bigger-is-better and unending economies of scale are monuments to the naiveté of professional management.[30] Why would anyone believe that the pathway to improved productivity should be marked by a series of inflexible monuments incapable of adjusting to changing circumstances? The answer is found in how we think about processes.

Thinking systemically about the economies of scale in the production system.

The economies of scale/bigger-is-better argument is based on a myopic view of a system. Focused on the production costs of the process, it largely ignores the transactions costs required for the process to function.

In the *Exhibit: Systemic view of the process*, the process is represented as the rectangle in the centre of the model. This is where value is added, whether it be a manufacturing a product or providing medical attention to a patient. It is also where the myopic view of professional management stays focused. Scaling up production volume or lot size reduces the per unit production cost. but these are not the only functions and costs involved.

Supporting components are required to move work into and out of the process. (represented as triangles in the Exhibit). Queues of people waiting for services, waiting lists, raw material and work in process inventory, finished goods inventory, people waiting discharge, transportation (in and out), must all be managed and with that comes additional administrative, purchasing, warehousing and marketing costs.

For example, patients arriving at an emergency ward must first be *processed* by staff conducting triage, taking insurance information, gathering and recording administrative details and queuing patients for examination and treatment. Constant juggling and reprioritizing of patients is required as new patients arrive. All this before the patient ever sees the doctor. Eventually, the medical team examines the patient and provides the treatment required. The patient is then queued for release or perhaps transfer to a longer term bed involving a whole new suite of administrative functions.

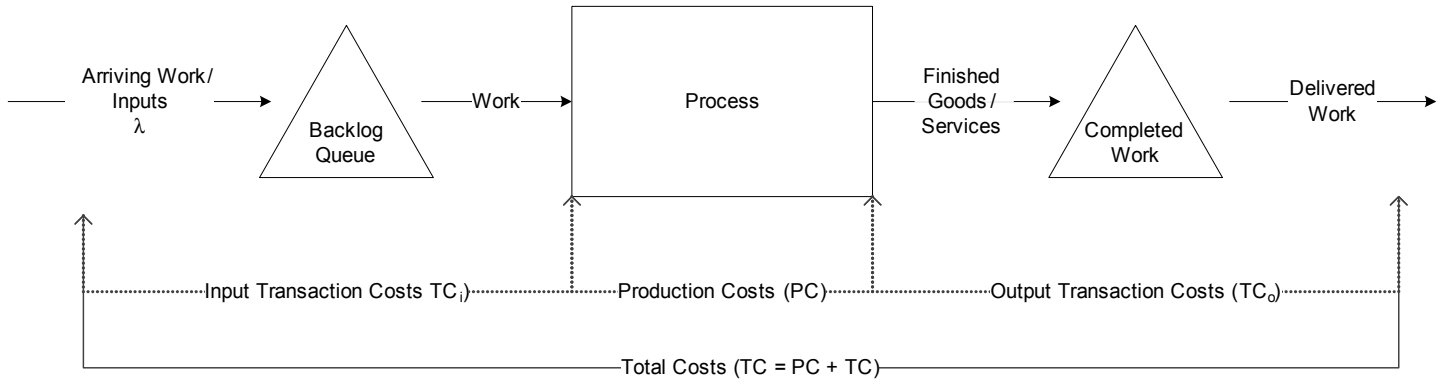
Command and control thinking reinforces a bigger-is-better heuristic. The reliance on operational and cost accounting reports reinforces the myth of bigger-is-better. Increasing a production run may reduce production cost from $15.00 to $10.00 per unit. Captured by the cost accounting system, this figure flows through to the professional manager who will reward himself for a job well done. The size of the production run, however, exposes the organization to greater risk. If consumer preferences shift or the demand forecasts are off, the organization will be stuck with product to be discounted or scrapped. These transaction costs will be allocated elsewhere, perhaps to marketing for failing to move the product, disconnecting the output transactions costs from production decision and preserving the myth of infinite economies of scale.

[29] attributed: Jan L. A. van de Snepscheut

[30] General George S. Patton

Converge Consulting Group Inc.
www.converge-group.com
403 266 0061

Systemic view of the process



The same issues apply in the bulk purchase of materials. Buying-in-bulk saves money is the common sense conclusion of professional management, reinforced in our own day to day experience - as anyone paying a visit to Costco will attest. Buy your pesto by the gallon and you get it cheap. That works for a family of 7, but what about a family of two? Just how much pesto can you eat before the expiry date? At what point will you be disposing of moldy pesto?

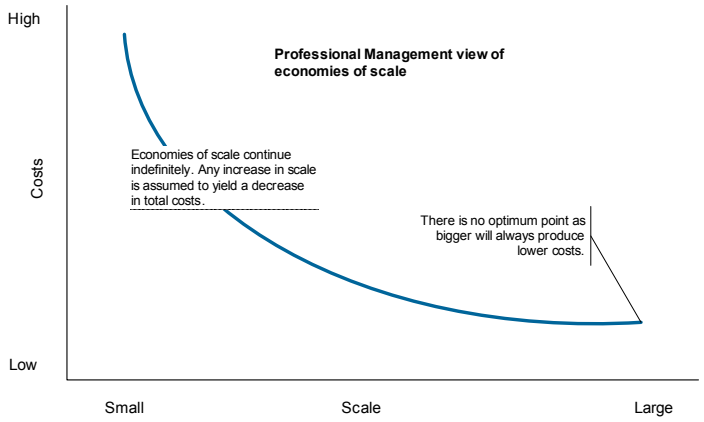
The per unit purchase cost may be lowered by buying in bulk, but those units must be properly stored, managed and financed, all of which adds to the incremental cost. These costs are not typically allocated directly to these units by the cost accounting system. Like remembering that great deal on pesto while forgetting that half of it ended up in the garbage, the result is a distorted understanding of the benefits of economies of scale. Making the simple-minded assumption that costs always decline with increases in scale, ignores input and output transaction costs and the effects of diseconomies of scale, reinforcing the application of the bigger-is-better heuristic in decision making. The practicing manager knows better. The results of a large production run are too obvious to miss as stockpiled inventories crowd the shop floor. These differing perspectives are presented in the *Exhibit: Differing perceptions of economies of scale*.

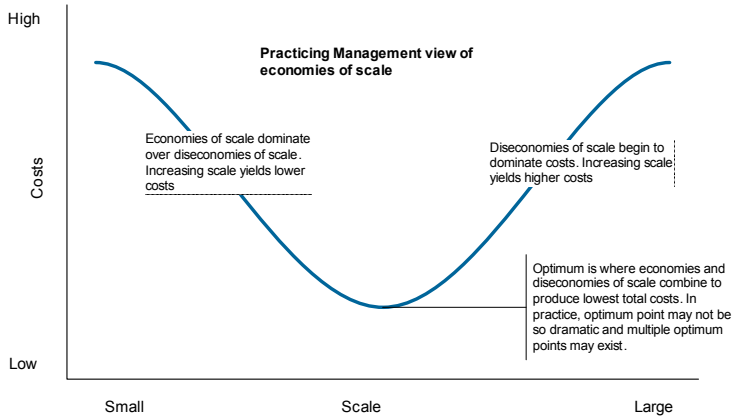
Economies of scale are not limitless. The bigger is better heuristic will always eventually increase costs. Transaction costs arising from increasing production volumes, lot size or facility scale also benefit from economies of scale, but not as much as production costs, and the diseconomies of scale, tend to be stronger. The combination produces one or more local optimums in the relationship curve between scale and costs - points at which total costs are minimized. This means the scale decision is more complicated than allowed for in the simplifying bigger-is-better heuristic of command and control thinking that inevitably drives scale beyond the local cost optimum.

Adam Smith's *Wealth of Nations*, upon which command and control thinking on economies of scale is based, clearly recognized this. After detailing the mechanisms and principles of returns to specialization in the first two chapters, Smith highlights the assumptions upon which the returns to specialization and economies of scale argument rest in the third. If the title of Chapter 3, *That the Division of Labour Is Limited by the Extent of the Market* wasn't enough foreshadowing, these include assuming an infinite market with relatively low or no product transportation costs -- making output transaction costs equal to zero. Similarly, for input transaction costs. When these assumptions are violated, that is when transactions costs are included, returns to

specialization decline and diseconomies of scale increase. So much so, that Smith points out that the distribution of successful economic development has been more influenced by these transaction costs (largely dominated by transportation costs in Smith's day) than the benefits of return to specialization. It's as if professional management never read beyond Chapter 2.

Exhibit: Differing perceptions of economies of scale.





The systems thinking of the practicing manager recognizes both production and transaction costs understanding how these combine to produce both economies and diseconomies of scale. Decisions concerning scale - everything from the design of facilities, to the consolidation of functions, to lot size and purchase decisions - cannot be reduced to a simple bigger-is-better improvement heuristic. Doing so will always move the organization beyond any local optimum and drive total costs upwards.

Much of the productivity and efficiency gains made in industry through system thinking and Lean production have been realized by reducing transaction costs, taking advantage of returns to scope over returns to specialization and balancing economies and diseconomies of scale. Techniques such as kanban, pull production, one-piece flow, lot size reduction, CONWIP and just-in-time, work by limiting production to what is demanded and thereby reducing input and output transaction costs. Increased production costs (because of lower levels in production volume or lot sizes) are traded-off against the decreased transaction costs that come with reduced inventories, material handling, administrative, purchasing, and marketing transaction costs.

Escalating costs through economies of scale at AHS

The H1N1 scare provided a significant opportunity for the recently created AHS to demonstrate the advantages of scale to Albertans. AHS ordered sufficient doses of flu vaccine to inoculate every qualified Albertan in a single purchase transaction, obtaining the vaccine at a significant discount of roughly 60%. Big lot sizes mean low per unit purchase costs and AHS strongly trumpeted its success in acquiring large volumes of H1N1 vaccine at low cost.

Big lot sizes also mean big coordination/transaction costs. Large amounts of flu vaccine require climate controlled warehouses with equally large warehousing costs. Once warehoused, the vaccine must be repackaged into manageable lot sizes, delivered to vaccination clinics that must store the vaccine using specialized refrigeration units. All these are costs required of the large purchase volumes and lot

sizes, none of which were accounted for in the cost savings claims made by AHS.

Things get worse. When purchasing in bulk an accurate forecast of demand is essential. Order too little, and some people will not get the vaccine they need. Order too much, and the excess is pure waste. To get the big discounts, AHS ordered 2.2 million doses. As it turns out, only half that number chose to get vaccinated.

For some, this was a matter of personal choice. For others, a consequence of command and control thinking that limited inoculation efforts to a small number of specialized, larger-scaled clinics. The clinics delivered the vaccine but also similarly scaled backlogs and wait times. Many people simply gave up, tired of waiting in queues that snaked their way through clinic parking lots and in the middle of the Canadian winter. Meanwhile AHS struggled to coordinate the process from head office (centralized command and control) through news releases and media advertising, approving groups for immediate access to inoculations one day, and cancelling them the next. This had the opposite effect to that intended, adding to the confusion and producing delay, cost, and frustration.[31]

This left AHS stuck with about a million extra doses of vaccine. Much of this was thrown away and some was donated to Haiti in the aftermath of the earthquake there. It was unclear how many of the leftover doses were still of use as much of the vaccine had spoiled in storage at AHS - a result of longer than expected storage times and a shorter than expected shelf life (more transaction costs). There has been talk of lawsuits.

The transaction costs associated with the large lot sizes ordered by AHS managed to eliminate any cost savings achieved through the bulk purchase of vaccine. Such are transaction costs and diseconomies of scale. AHS has never acknowledged the total cost of the H1N1 fiasco but in 2009, consolidated purchasing in a new 'super-warehouse' built to facilitate more such economy of scale success stories.

Other examples of the simple-minded bigger is better heuristic at work within the Alberta health care system include:

Centralized and consolidated purchasing, human resource, information technology, asset management and finance functions in an effort to build returns to specialization and economies of scale. Line managers report costs charged to operations for newly consolidated services run between 5X to 20X more than previously incurred, or that would be incurred, if services were obtained from smaller providers outside the administrative hierarchy of AHS. Despite internal complaints, AHS forges ahead demanding operating units pay the increased service costs arising from consolidation from existing budgets. Money intended for health care is siphoned off to pay for enterprise-scaled human resource management (and similar) systems as well as the failings of a bankrupt management model.

Closing smaller health care facilities or services in favor of fewer, larger facilities. Arguments favoring closing facilities and services in smaller markets and consolidating them into larger-scaled facilities in larger markets was buttressed by the logic of economies of scale. As the transition took place, the costs incurred in moving patients greater distances (transaction costs) were greater than anticipated, diminishing the theoretical economic benefit.[32] It also produced

[31] This boiled over into anger and a political crisis when news broke that AHS allowed players for the NHL Calgary Flames to go to the head of the line and receive their inoculations without all the fuss and bother that others, such as the elderly, had to endure. Heads rolled and an investigation into AHS's handling of the H1N1 vaccination program was promised. This was delivered by the Health Quality Council of Alberta and detailed in: *Review of Alberta's Response to the 2009 H1N1 Influenza Pandemic*, http://www.hqca.ca/assets/pdf/H1N1/H1N1_OfficialReport_December_2010.pdf. A product of command and control thinking, the Report's first recommendation was to strengthen the "*command system*". No worse advice could be given.

[32] Like the H1N1 affair, this too prompted a crisis of its own. In June of 2009, AHS closed 8 of its rural helipads supporting air ambulance services. This was seen as an effort to further reduce the transportation costs associated with consolidation of services in larger urban areas. AHS claimed the helipads were closed because they had failed to meet Transport Canada regulations. Transport Canada made immediate and unequivocal denials of any involvement in the closures. This prompted the Chairman of AHS to re-open the helipads on the basis that an extension had been granted by Transport Canada, leaving AHS spokespeople scrambling to clarify what the Chair was saying or meant. Within two weeks of the original closures, the helipads had been

declines in the quality of care. Smaller rural hospitals, even if unable to treat patients completely, were at least capable of stabilizing patients quickly, before moving them on to a larger care facility. As the functional capabilities of these smaller hospitals are moved away, the ability to stabilize quickly is disappearing.

The simple-minded bigger-is-better heuristic, constructed on a foundation of returns to specialization and economies of scale is a disaster for the Alberta health care system, as it is for any business. Things are just not that simple. Careful weighing of economies and diseconomies of scale, of returns to specialization and returns to scope are necessary to find optimum locations on the total cost landscape.

Increasing utilization to increase costs, reduce efficiency and destroy access.

Increasing levels of centralization, consolidation and scale in Alberta health care were accompanied by a similar and equally intense efforts at eliminating redundant capacity. The pursuit of efficiency, by maximizing asset utilization, has had the greatest impact on people. Consolidating and centralizing only increases costs. The pursuit of efficiency through increased utilization can kill.

Early improvement efforts focused on cost reduction and led by professional managers with expertise in cost accounting and analysis. In Calgary, for example, the three member Calgary Facilitation Group on Health Services, was headed by the former Provincial Treasurer and given the single objective of reducing costs. The accounting firm of Price Waterhouse was contracted to provide cost analysis, projections and make recommendations.

The resulting report in Calgary, similar to other reports across the province, was predictably that of the professional management, dominated by descriptive data providing an accurate, detailed enumerative understanding of the system. Costs were divided up into numerous buckets providing the illusion of a higher order, analytic understanding. These were supplemented with other descriptive data including bed counts, population figures, bed to population ratios, cost per bed figures and related facility statistics, further promoting the illusion.

Over capacity was quickly tagged as the culprit for poor system efficiency[33]. Utilization rates and hospital bed per population ratios provided the evidence supporting rationalization (i.e.; reducing the number of beds). Improving utilization became the mantra of the health care efficiency experts in Alberta. Redundant capacity was vigorously attacked - small rural hospital services were closed, older facilities were sold or demolished, new and expanding facilities were frozen and expansion of existing services constrained by regulation.

These efforts are best remembered in Alberta by the demolition of the Bow Valley Centre, known as *the General*. (Yes, the same General that was branded a *loser* by the HPI.) In a nationally televised event, the huge complex of buildings was literally blown to pieces in 1998 in one of the largest demolitions ever to have occurred in Canada. Not surprisingly, the demolition became a symbol of government determination to gain efficiency and reduce costs through improved utilization.

The results of these and related efforts were as spectacular as the General's demolition. Hospital bed utilization rose from approximately 70% to to 95% and to close to 100% by 2008.[34] Similar utilization/efficiency improvements were reported for everything from

reopened, the Chair had apologized to small town mayors and AHS announced the creation of 12 community 'advisory councils' to help improve decision making.

[33] One reason that physical capacity is so often tagged as a culprit in enumerative studies is because it is the easiest thing to count. It is, after all, not particularly difficult to count the number of beds in a hospital or clinic and people tend to focus on those things for which they have the most readably available data (availability heuristic). Useful data, such as type, level and variation in demand is far more difficult and expensive to gather and, therefore, is typically ignored.

[34] Utilization rates varied considerably across the system. The figures quoted represent crude averages based on written reports and interviews with health care administrators in Alberta.

extended care facilities to family physicians to laboratories and clinics. Yet, for all these efforts:

(i) health care costs continued to spiral upwards, and

(ii) access to medical care deteriorated, producing long waits for everything from hip replacement surgery to emergency care. So bad were the results in this regard, that lack of access replaced system costs as the major public issue in Alberta healthcare.

Both of these effects are a predictable outcomes of professional management command and control thinking that pursues utilization as a goal.

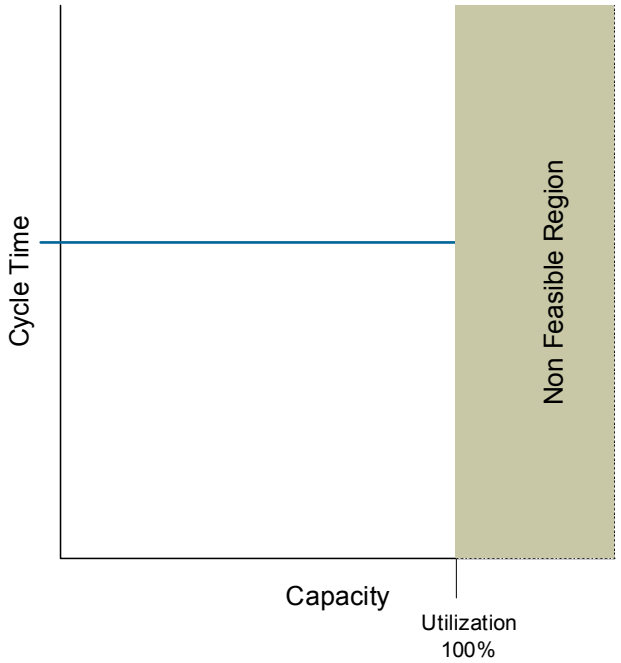
Understanding Capacity

The perspectives of command and control versus systems thinking on capacity and utilization are contrasted by Hopp and Spearman[35] in what they termed the *traditional* and *modern* view.

The traditional view is that of the professional management. It holds that cycle time and throughput are constant for any utilization levels below 100% capacity. The cycle time to treat a patient, in an emergency ward with a 1000 visit per day capacity, is believed to be the same whether utilization is 60% or 95%.

This view is presented graphically in the *Exhibit: Traditional view of capacity*. The line representing cycle time, the efficiency measure, is constant (flat) for all values of utilization below 100%. If, the average emergency visit has a cycle time of 2.4 hours, it is assumed to have this cycle time regardless of whether the utilization is 10%, 60% or 90%. There are no wait times so long as average demand is less than average capacity. Under these assumptions capacity planning becomes a simple exercise of building capacity to accommodate a forecasted volume.

Exhibit: Traditional view of capacity (enumerative understanding)



Source: Adapted from Factory Physics. p. 596

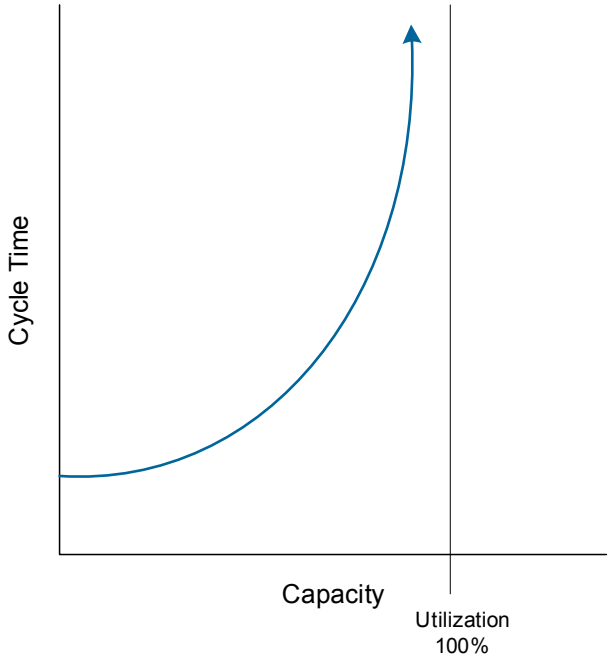
This was the approach to planning health care capacity in Alberta. Population to bed ratios were determined, utilization rates calculated and targets established. Excess beds were then removed from the system by closing wards and health centers and blowing up the occasional hospital in an effort to maximize efficiency, that is, bringing utilization as close to 100% as possible (after making allowances for unforeseen events).

While pursuing full utilization makes sense to the professional manager, to the practicing manager, it is incomprehensible nonsense. This, because the traditional view doesn't describe the way things actually work. Cycle time is *not* constant for different utilization levels. Rather, increasing utilization always produces exponential increases in

[35] Hopp, Wallace J. and Spearman, Mark L. Factory Physics. Irwin, 1996

cycle time and corresponding reductions in efficiency as depicted in the *Exhibit: Modern view of capacity (analytic understanding)*.

Exhibit: Modern view of capacity (analytic understanding)

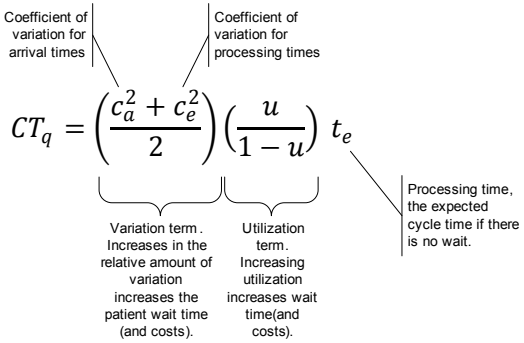


Source: Adapted from Factory Physics. p. 596

In manufacturing, increasing utilization, even when this utilization is less than capacity, produces a buildup of parts inventories and work-in-process. In services, it increases lead times and backlogs, and for people seeking medical attention, it means more time spent in emergency waiting rooms and growing waitlists of people unable to access the health care system.

The mathematical model describing the dynamic relationship among wait times, variation, utilization and capacity is given by the formula in the *Exhibit: Model of waiting times.*

Exhibit: Model of Waiting times



The time spent waiting in line (CT_q) is a function of the variability in arrival (c_a) and processing times (c_e), the level of utilization (u) and the capacity of the system expressed as processing cycle time (t_e).

The ubiquitous nature of variation makes systems thinking a requirement.

The central problem of management in all its aspects including planning, procurement, manufacturing, research, sales, personnel, accounting, and law, is to better understand the meaning of variation.[36]

Without variation ($\frac{c_a^2+c_e^2}{2} = 0$) system behavior is as the professional manager expects. Total cycle time equals the processing cycle time (t_e) at all levels of utilization since there is no wait time (CT_q = 0). But in the real world, variation is never zero. Knowing that a hospital emergency ward serves an average of 900 people per day is a descriptive piece of information (enumerative) telling us nothing about the real world dynamics of the process. Few would assume that precisely 900 people are served each and every day, some days more are served, other days less. Nor are arrival rates smooth and precise

[36] Deming, Edwards. Out of the Crisis, Massachusetts Institute of Technology, Centre for Advanced Engineering Study, Cambridge Massachusetts, Mass. p. 20

occurring every 96 seconds. Anyone spending time at emergency ward knows that people arrive in bunches and clumps. This variation is expressed in the coefficient of arrival time variation (c_a^2). Likewise, not everyone comes in with the average condition taking a precise 2.4 hours to treat. Some people require more time, others less. These will add to the variation in the process time (c_e^2).

With variation greater than zero, the effects of utilization take hold. Rather than displaying a flat profile that is insensitive to utilization, cycle time takes on the shape of an exponential curve extremely sensitive to utilization.

How sensitive? Take a hospital emergency room with a 1000 person per day capacity and an average processing cycle time of 2.4 hours per patient (the t_e in our equation). To make things easy, let's hold our coefficient of variation term constant at 1 ($\frac{c_a^2+c_e^2}{2}=1$). Using these assumptions, we can examine the impact of utilization on wait times and system efficiency.

In Alberta, hospital bed rationalization raised utilization from 70% to 95% in the period from 1985 to 2000. How would this increase in utilization affect wait times (CT_q)? To answer this, recall our utilization term $\left(\frac{u}{1-u}\right)$. At 70% utilization, the utilization term becomes 2.33 and the expected wait time (time spent in the queue) is 1*2.33*2.4 hours or 5.6 hours. That would make the total cycle time 8.0 hours (5.6 hours of waiting and 2.4 hours of processing time). The wait alone is twice as long as the time it takes to treat a patient (t_e), even when average utilization is well below 100%, something the professional manager (and those efficiency studies recommending rationalization) assume doesn't happen.

Raising the utilization to 95% increases the wait time by a factor of 8, to 45.6 hours. The calculations for these and other wait times associated with utilization rates (assuming the variation term is 1) is presented in the *Exhibit: Utilization and wait times.*

Exhibit: Utilization and wait times

U (utilization)	$\left(\frac{u}{1-u}\right)$	Processing time in hours (t_e)	Wait Time in hours (CTq)	Total Cycle Time in hours
70%	2.33	2.4	5.6	8.0
80%	4.0	2.4	9.6	12.0
90%	9.0	2.4	21.6	24.0
95%	19.0	2.4	45.6	48.0
100%	∞	2.4	∞	∞

When utilization hits 100%, the utilization term increases to infinity as does the wait time in the queue - a system crash. Of course, a hospital or the health care system doesn't crash in the same way a computer does. The system keeps functioning, but must take extraordinary action to build, if only on a temporary basis, added capacity.

Capacity Crisis Cycle

The ubiquitous nature of variation means that pursuing utilization as a goal will inevitably produce a *capacity crisis cycle*.[37]

1. Schedule your plant at 100% capacity. Increasing utilization has been a goal of the Alberta health care system for the past 20 years.

[37] Hopp, Wallace J., Spearman, Mark L., Factory Physics, Irwin, 1996. p 623. This is based on the" vicious overtime cycle" described in Factory Physics. It can also be understood as a special case of the command and control crisis cycle described earlier, that is also based on the *vicious overtime cycle*.

2. Start working. Variability happens. Variability always happens, a reality ignored in enumerative understanding.

3. Cycle time starts to get long, WIP piles up, orders begin to ship late. In a health care system, this means backlogs of people waiting to get in to see a doctor.

4. Add capacity (overtime or outsourcing) or reduce the amount of jobs in your plant. Again, in the Alberta health care system, this means placing hospital beds in broom closets, using hallways as overflow areas, adding more physicians into the system and contracting-out temporary capacity. (Because of a direct supervisory coordination strategy, these decisions take longer than they should, exacerbating the crisis).

5. Things get back under control. Health care leadership claims we are on the right track and everyone breathes a sigh of relief.

6. Go back to step 1.

In healthcare, the congestion effects compound themselves across the system. Recent estimates have 50% of (expensive) emergency beds in Alberta big city hospitals occupied by elderly residents with relatively minor medical concerns.[38] These patients are simply waiting for transfer to other hospital wards (less expensive) or extended care facilities (way less expensive). In essence, extended care facilities are using expensive emergency care beds as a way of building extended care capacity (Step 4 of the *capacity crisis cycle*). In the meantime, emergency care patients needing and awaiting a bed are placed in converted closets or laid out in hallways - another way of building capacity.

All processes and systems display variation, a point that is obvious to the practicing manager who spends a better part of the day dealing with it. Not so the professional manager. Voluntarily sequestered to the 42th floor of head office, the professional manager is insulated from the effects of variation by the reports and summary statistics dominating cost and operational reporting. It is understanding and appreciating variation that in large measure separates the practicing manager from the professional manager. In a literal sense, when it comes to variation, the professional manager just doesn't get it.

Utilization isn't a goal, it's a strategy.

Companies like Toyota and others pursuing strategies such as Lean, have reduced costs, cycle times and WIP by emphasizing a smooth flow of operations. Techniques such as demand smoothing, line-balancing, variation management, single piece flow, kanban, just-in-time, CONWIP and cellular manufacturing reduce both demand and production variation. These strategies have seen global acceptance in industry, but have been ignored by health care experts in Alberta.

Smoothing demand isn't always an option. Service organizations, including health services, cannot always employ the variation reduction techniques used in industry. In healthcare, for example, you can't order people to stay well, avoid accidents, or show up at the emergency ward in evenly spaced time increments. How to deal with variation when it cannot be managed directly?

The greater the variation the greater the cost and it is a bill that must be paid. If variation cannot be reduced, the bill will be paid through one or more of the following means:

1. Long cycle times and high WIP levels,

2. Wasted capacity (low utilization of resources),

3. Lost throughput.[39]

Like squeezing a balloon and having it bulge from between your hands, squeezing down on one of the three above, and the other two will bulge outward. Squeezing capacity (increasing utilization) inevitably produces longer cycle times (wait lists for procedures),

[38] Edmonton Journal, October 22, 2010 Alberta emergency doctors warn of catastrophic collapse.

[39] Hopp, Wallace J., Spearman, Mark L., Factory Physics, Irwin, 1996. p 623. This point is summed up in Law 11.

greater work in process (crowded emergency rooms) and declining throughput (lower efficiency, higher costs). It can't be avoided.

In the face of uncontrollable demand variation, reducing utilization (having excess capacity) may be an effective way, perhaps the only way, of maintaining effective, efficient and flexible services. It is helpful and often necessary to have excess capacity when those emergency ward arrivals go beyond the levels planned for by accountants. Utilization is a strategy, a choice among three alternatives for paying the costs produced by variation.

Sound management practice weighs the comparative costs of providing excess capacity against other *long cycle times and high WIP levels* and *lost throughput*. Excess capacity may be the most cost effective alternative available. Utilization then, isn't a goal, it's a strategy. Specifically, a strategy for dealing with, and managing the costs of, variation.

Not to command and control thinking though, that sees 100% utilization as the holy grail of operational efficiency. The capacity crisis cycles experienced in Alberta for the past two decades have been a necessary and predictable consequence of professional management efficiency improvement efforts focusing on asset utilization. Capacity crises will always emerge when utilization is pursued as a goal. Alberta has spent millions blindly pursuing a this goal, guaranteeing service backlogs, long cycle times, high work-in-process levels, lost production, excessive costs and a never ending series of capacity crises.[40]

Evidently, these efforts have succeeded. Emergency wards are close to 100% capacity. Recently Dr. Paul Parks, the Alberta Medical Association's section president of emergency medicine to take the unprecedented step of warning the government in writing of a "*potential catastrophic collapse*" as a "*direct result of a lack of capacity within the system*."[41]

Destroying performance by setting targets

Eliminate slogans, exhortations and targets . . . Eliminate work standards (quotas) . . . Eliminate management by objective. Eliminate management by numbers, numerical goals. Substitute leadership.[42]

Early efforts at cost reduction were brought into sharp relief by mindless extrapolations creating a public perception of impending doom. Health care costs, as a proportion of the total provincial budget, were rising. Health care experts warned that left unchecked, a sustainability crisis would ensue with health care costs consuming the entire provincial budget leaving nothing for education and other services.

Such extrapolations appear logical to enumerative aspects of command and control thinking, but are obvious nonsense. Norman Augustine noted (with tongue firmly in cheek) that as the proportion of weight consumed by electronics was rising for each new generation of aircraft ordered by the Pentagon, it would not be long before military aircraft would have no wings, fuselage nor engine - only electronics[43] (of course, that may be a good thing). Leave it to Mark Twain to beat Mr. Augustine to the punch by close to a century, noting:

In the space of one hundred and seventy-six years the Lower Mississippi has shortened itself two hundred and forty-two miles. That is an average of a trifle over a mile and a third per year. Therefore, any person who is not blind or idiotic . . . can see that seven hundred and forty-two years from now the Lower Mississippi will only be a mile and

[40] For more on this and the effects of pursuing capacity as a performance objective, see Law 11 in Factory Physics p. 296

[41] Calgary Herald October 23, 2010. *Hospital waits hit historic worst in Calgary*.

[42] Edwards Deming, Out of the Crisis. Massachusetts Institute of Technology, Cambridge Mass. 1992. p. 24

[43] Augustine, Norman, R. Augustine's Laws. American Institute of Aeronautics and Astronautics, Inc. 1997

three-quarters long. . . There is something fascinating about science. One gets such wholesale returns of conjecture out of such a trifling investment in fact.[44]

It is these *wholesale returns of conjecture* that have provided much of the improvement motivation for the Alberta health care system over the last 20 years, driving cost reduction strategies, pushing utilization closer to 100% and predictably increasing wait times and costs as a result. With each new iteration of the *capacity crisis cycle,* public demand for change has increased. Rising costs produce concern with taxpayers, but when access deteriorates and people start dying while waiting for care, public reaction quickly moves *access* to the top of the health care agenda.

The response has been to introduce performance measures and targets. Each new round of the *capacity crisis* is now accompanied by a new set of accountability agreements, performance measures, standards of service and numerical performance targets in which professional management assure the public that all will be well - any day now.

This has created its own little sub-industry. The Health Quality Council of Alberta (HQCA) was established in January of 2002 as the Health Services Utilization and Outcomes Commission -- a result of recommendations contained in the *Report of the Premier's Advisory Council on Health* (Mazankowski Report) in 2001. The Report recommended:

Make quality the top priority for Alberta's health system. Set standards, measure results, and hold people accountable for achieving better outcomes in health.

Establishing a permanent, independent "Outcomes Commission" with the responsibility of measuring outcomes, tracking progress and reporting results in achieving goals and targets on a long-term basis. [45]

The HQCA functioned as a Ministerial Committee until July of 2006 when it was expanded and designated as its own Health Authority. The role of the HQCA is currently to provide: *an independent assessment of the quality, safety and performance of the province's health system.*[46]

As a result, Alberta is now awash in health system performance measures and standards. The data gathered and the reports produced are largely enumerative - describing conditions and making comparisons to targets. As Deming pointed out, this information can make little or no contribution to improvement. [47] They are exercises in public relations - empty promises, giving the appearance of action where none exists.

Professional management largely equates the job of management to setting expectations - identifying performance targets to be met and assigning responsibility (accountability) to subordinates. The subordinates job is meeting these expectations - somehow. Problem with sales? Set higher targets for sales staff - that'll do it. Want to improve the health care system? *Set standards, measure results, and hold people accountable.* Mission accomplished!

The appeal of this approach to professional management is all too apparent - you can do your job without actually knowing how to do anything. The argument for numerical targets usually rests with one or more of the following ideological propositions of command and control thinking.[48]

---

[44] Twain, Mark, Life on the Mississippi as quoted in Darrell Huff, How to Lie With Statistics, Norton Paperback, 1993, New York, New York. p.142

[45] *A Framework for Reform. Report of the Premiers Advisory Council on Health*, December, 2001. p. 8 The Mazankowski Report is an example of mixing professional management and political thinking, using descriptive data to support pre-determined conclusions much like a drunk uses a lamppost, for support rather than illumination. Thus the Report could conclude that improving access to the system could be done by simply providing a *90 day guaranty of access* while omitting any discussion of increasing capacity. http://www.health.alberta.ca/documents/Mazankowski-Report-2001.pdf

[46] Backgrounder, HQCA June 01, 2006.

[47] Deming, Edwards, W. On Probability as a Basis for Action. The American Statistician, November 1975, Vol. 29, No. 4

[48] Seddon, John, Systems Thinking in the Public Sector, Triarchy Press, Axminster, U.K. 1988.

Targets are required to clearly communicate direction. The assumption here is that the reason the system is not performing to expectations is because people working within the system don't have a clear understanding of what the expectations are. Hip replacements take a year because surgeons are blissfully unaware that people prefer to have their pain reducing surgery sooner rather than later. The same confusion is at work in hospital emergency rooms where the need for urgent medical care has somehow escaped the notice of hospital staff.

Targets motivate people. The assumption is that health care staff are simply not motivated to help the sick piling-up in emergency waiting rooms. Evidently, compassion has gone missing. Nurses ignore the moans of the sick, dreaming of the day they are once again motivated to help by a target received from the 42nd floor..

Targets are required for accountability. Doubtful, but even so, if used in this way, people are only accountable for achieving the target, often at the expense of system performance. This is what happened when the General Hospital in Calgary refused to take dying patients from other hospitals - a move that improved their HPI levels (for which they were accountable) while yielding poorer quality health care and directly producing yet another in a long string of health system crises (for which they were not accountable).

Targets work if SMART. SMART stands for Specific, Measureable, Achievable, Realistic and Time-bound. There is no definition as to what is meant by *work*. Nor how to tell if something is *achievable* or not. How would you know? Similar vacuums exist for the balance of SMART components. SMART is proof that "*a good catchword can obscure analysis for fifty years*."[49] SMART needs to be contrasted with DUMB - Distorting, Undermining, Minister-inspired and Blocking[50]. There are other more aggressive fills for DUMB, but they all make the point that *targets don't work.*

Targets ignore variation

One reason targets don't work is that they ignore variation. The enumerative understanding of command and control thinking sees performance as a single number: waiting time in emergency rooms is 3.6 hours, average stay in hospital is 7.4 days and so on. For the professional manager, setting targets appears reasonable: waiting times in emergency rooms, say, should average 2.0 hours.

The problem is that the performance of a process or system cannot be understood as a single number because a single number collapses all the variation, all the useful information for understanding system behavior, into a single summary statistic. It's like trying to appreciate Hamlet by reading the comic book. Informational content is sacrificed for ease of reporting and comprehension.

System or process performance is properly represented on a analytic tool such as a run or control chart. Here, the data is presented in its original time order and messy detail. Performance rises and falls and rises again -- the results of a functioning dynamic system of interrelated and interacting causes and conditions.

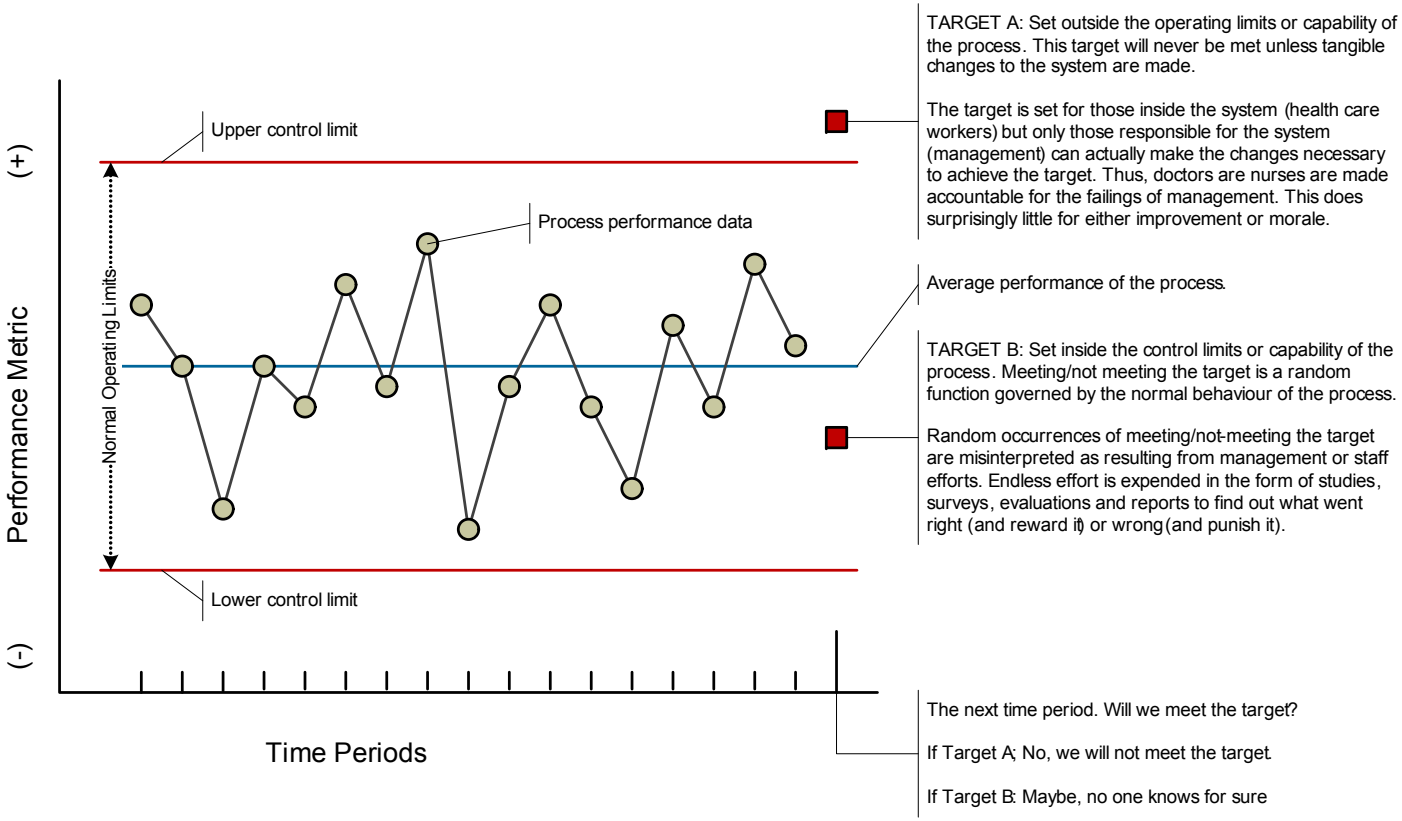
The control chart also provides the operating parameters of the process. The expected value of the process is represented by the mean or median statistic (blue line in Exhibit), and upper and lower control limits (red lines in Exhibit) are determined through sigma, a measure of variation. The expected value and the upper & lower control limits combine to define process capability[51]. Without both, any inference concerning process capability and performance, is meaningless.

[49] Wendell Willkie

[50] |Seddon, John, Systems Thinking in the Public Sector, Triarchy Press, Axminster, U.K. 1988.

[51] These parameters only exist with a stable process (in statistical control). A process failing to demonstrate statistical control (not shown) has no defined capability making the point of a target, moot.

Exhibit: Process behavior and targets



Whether a process or system is capable of meeting a target is dependent upon where the target is placed relative to the operating parameters. Two possibilities exist;

(i) the target will be placed outside the control limits or,

(ii) inside the control limits.

A control chart in not required for this to be true, processes have a capability regardless of whether a control chart is created to calculate that capability.

Placed outside the control limit, Target A represents the impossible dream strategy - the target is beyond the capability of the system. Staff can do nothing to change this because system design and, therefore, capability, is the responsibility of management. Faced with this intimidating prospect, people working within the system have two

possible choices: cheat by manipulating the performance numbers or, resign oneself to a lifetime of guaranteed and continual failure. Neither contributes much to performance improvement or staff morale.

Achieving a target beyond system capability requires a change to the system - there is no other way. As the system is the responsibility of senior management, not those working within it, those working within the system are held accountable for the failings of management. This does little for staff morale either, but the appeal to professional management is obvious - the promotion of accountability while absolving yourself of any.

Inside the control limit, Target B represents the win some, lose some strategy. For any process with a defined capability, performance will be random, somewhere between the upper and lower control limits, clustering around the average line. Beyond that, no one has any idea where the next data point will be.

If the target is made or exceeded, management will reward themselves for a job well done, reinforcing the delusion of successful managerial efforts. If the target is missed, the professional manager will conduct a gap analysis, highlighting the failings of staff and implementing corrective actions (tampering) further increasing complexity, variation and degrading system performance.[52] Here again, the appeal to professional management is obvious - success is claimed while failure is delegated.

Targets in the Alberta health care system.

Alberta's Health Minister, Mr. Gene Zwozdesky recently announced the latest 5-year plan to improve care in the province, describing it as: "*the most aggressive and the most ambitious plan of any province with respect to health care improvements in Canada*"[53]. Not once in the twenty year history of health care planning and target setting have the proposed targets for Alberta been achieved. Thus, it is fair to conclude that the system's response to failure is setting ever more numerous and aggressive targets. (If at first you don't succeed, change the definition of success.)

'*Becoming the Best: Alberta's 5-year Health Action Plan*', focuses on reducing wait times for surgeries, offering quicker access to cancer treatments and promising faster treatment at emergency rooms. According to the Ministry,

"Some highlights Albertans can expect to see under the plan include:

- *reduced wait times for hip surgery (60% reduction in wait times);*
- *quicker access to radiation oncologists for patients (70% reduction in wait times),*
- *faster treatment at emergency departments (90% of patients to be treated and admitted to hospital within 8 hours, and 90% of patients to be treated and released within 4 hours),"*[54]

Accompanying *Becoming the Best*, is *Alberta's Health System Performance Measures* detailing the targets for the system with their *SMART* characteristics (although there has been plenty of debate concerning how achievable and realistic the targets are). An example is provided in the *Exhibit: Alberta Health System Performance Measures Sample.*

[52] Gap analysis is little more than a management conceit. After all, how much analysis must be done to determine one number is bigger (or smaller) than another? My son knew his numbers by Grade 2. Professional managers argue that the analysis lies in determining the root cause or material significance of the gap, but without a control chart, there is no way to tell if a gap is a result of random or special cause variation and, therefore, there is no way to judge material significance.

[53] The Way Forward, *5-year Health Action Plan sets clear course for health system*. Alberta Health and Wellness, http://www.albertahealthservices.ca/rls/ne-rls-2010-11-30-5-year-action-plan.pdf

[54] ibid

Exhibit: Alberta Health System Performance Measures Sample[55]

Government of Alberta

Alberta Health Services

ALBERTA'S HEALTH SYSTEM PERFORMANCE MEASURES

1.0 Quality of Health Services: Access to Surgery

Priorities for Action	Performance Measures	Last Actual (year)	Targets					National Benchmark
			2010-11	2011-12	2012-13	2013-14	2014-15	
Acute Care	**Access to Surgery**							
Reduce the wait time for surgical procedures.	1.1 Wait Time for Cardiac Surgery: The maximum time that 9 out of 10 people will wait (in weeks) from the decision to treat to treatment, for coronary artery bypass surgery (CABG), by urgency level:							
	• Level 1 = Urgent	2.4 weeks	1.5 weeks	1 week	1 week	1 week	1 week	2 weeks
	• Level 2 = Semi-Urgent	7.0 weeks	5 weeks	2 weeks	2 weeks	2 weeks	2 weeks	6 weeks
	• Level 3 = Scheduled	31.0 weeks	15 weeks	6 weeks	6 weeks	6 weeks	6 weeks	26 weeks
	1.2 Wait Time for Hip Replacement Surgery: The maximum time that 9 out of 10 people will wait (in weeks) from the decision to treat to treatment.[1]	35 weeks	28 weeks	27 weeks	22 weeks	18 weeks	14 weeks	26 weeks
	1.3 Wait Time for Knee Replacement Surgery: The maximum time that 9 out of 10 people will wait (in weeks) from the decision to treat to treatment.[1]	49 weeks (2009-10)	42 weeks	35 weeks	28 weeks	21 weeks	14 weeks	26 weeks

[1]The wait time from referral to an orthopedic specialist, to the time of decision to treat, will be measured in 2013-14 and 2014-15. The proposed target is 10 weeks for this wait time.

Alberta's Health System Performance Measures
November 30, 2010

1 of 20

For example, Performance Measure 1.2 indicates that the Wait Time for Hip Replacement Surgery (for 9 out of 10 people) is currently 35 weeks. Targets have been set for 28 weeks next year and reducing this to 14 weeks in five years, conveniently beating the *National Benchmark* by close to 50%.

This works well as a sales document - the public is assured that in 5 years, Alberta will have the fastest hip replacement cycle time in Canada. There are even numbers to prove it!

Yet how do these targets contribute to improvement? People in the system already know that faster is better and are working to reduce these cycle times. Is the 28 week target next year within the capability of the system? How about the 14 week target five years from now? Without knowledge of system capability, a rational plan to achieve the targets is an impossibility and *Becoming the Best,* is either an illusion or delusion, depending upon who believes it.

[55] Alberta's Health System Performance Measures, November 30, 2010 p.1 http://www.health.alberta.ca/documents/Health-Performance-Measures-2010.pdf

Fear invites wrong figures.[56]Targets only reinforce a culture of intimidation and game playing, corrupting the data needed for effective decision making.[57] For example, the wait for Hip Replacement Surgery currently reported as 35 weeks is a fantasy created by those working in the system. To meet wait time targets, many surgical offices in Alberta maintain *unofficial* waitlists of patients, where wait time is not recorded. Patients are moved to the official waitlist (where wait time is recorded) when the probability of meeting the target (for which people are held accountable) is good.

This shadow waitlist system currently has a cycle time of about 12 weeks. This makes the actual wait time for Hip Replacement Surgery closer to 45-50 weeks, roughly 30% longer than reported. Having management (and the public) operating under the delusion of a 35 week wait time does not contribute to improvement. If the 14 week target is met in five years, there will be much celebration, but the results will only reflect the success of the shadow wait system in manipulating the numbers.

There is a certain comical quality to this. People not responsible for the system, but held accountable for its performance, now have waitlists for waitlists to mislead those who are responsible for the system but not held accountable for it, to incorrectly evaluate performance in order to hold those not responsible for system accountable for meeting targets that are not achievable. Deming called the notion of accountability, *ridiculous.* He may have something there.

Replacing targets with leadership - and vice versa.

Eliminate management by numbers, numerical goals. Substitute leadership.[58]

Management by numbers is like painting by numbers. It's easy to do, but the results bear only the most superficial resemblance to the real thing. In setting targets, only two possibilities exist;

(i) either the target lies beyond the control limit/operating capability of the system, in which case, the target cannot and will not be met, or

(ii) the target lies within the control limit/operating capability of the system, in which case it can be met, but not in any reliable fashion.

Neither contributes to improvement. Both contribute to internal competition and gamesmanship to the detriment of system performance. So what's the point? Targets have one purpose, providing the illusion of leadership where there is none.[59]

It was not enough to chase out the cost accountants from the plants. The problem was to chase cost accounting from my people's minds.[60] Improving the performance of the Alberta health care system (or any other system) requires leadership. Begin by throwing out the arbitrary performance targets from the 42nd floor. Substitute with leadership, real managers working on the system, constantly improving capability. This requires loosening control, giving managers room to maneuver, to make decisions, to take responsibility for their operations and even to make a few mistakes. This is the real stuff of work. It's harder than

[56] Deming, Edwards, The New Economics, Massachusetts Institute of Technology, Centre for Advanced Engineering Study, 1994 p. 97

[57] Edward Tufte uses the term *evidence corruption* to describe a myriad of methods by which the meaning of data is lost, either through simple technical error or deliberate efforts to deceive. See Beautiful Evidence, Edward Tufte, Graphics Press LLC.

[58] Edwards Deming, Out of the Crisis. Massachusetts Institute of Technology, Cambridge Mass. 1992. p. 24

[59] Targets can be seen as useful as measures of the level of leadership in an organization. The greater the number of numerical targets the lower the level of leadership, the fewer the targets, the greater the level of leadership. The absence of targets means fewer people manipulating information for personal reward and more people using data to improve performance.

[60] Taiichi Ohno

having bean-counters and professional managers manipulating and painting by the numbers, but the results are worth it.

Real managers, real leaders, exist within the Alberta health care system. They are in teams, departments and subsidiaries that have managed to stave off the debilitating influences of command and control. Knowledge of these well performing areas is widely shared and understood within AHS, but rather than looking to these areas for inspiration, the system is focused on tightening its grip, choking out the last vestiges of innovation, integrity and possibility of improvement. The contrast of professional and practicing management in AHS, and elsewhere, is best made in the words of Theodore Roosevelt.

The credit belongs to the man who is actually in the arena; whose face is marred by dust and sweat and blood; who strives valiantly; who errs and comes short again and again; who knows the great enthusiasms, the great devotions, and spends himself in a worthy cause; who at best, knows in the end the triumph of high achievement; who, at worst, if he fails, at least fails while daring greatly, so that his place shall never be with those cold and timid souls who know neither victory nor defeat.[61]

Destroying the performance of any system or organization takes one thing: professional management.

Command and control is built on the insight of Frederick Taylor that any job is comprised of *planning* and *doing* components. Drucker described this insight as "*a greater contribution to America's industrial rise than stopwatch or time and motion study. On it rests the entire structure of modern management*.[62]"

But Drucker also saw Taylor's big mistake, noting that management that plans without doing, "*dreams rather than performs*"[63]. The big mistake of Taylor, and of professional management, is extending a valuable conceptual and analytical insight into practice. Just because, *it is effective to analyze work broken down into its elemental motions, does not necessarily imply that it is effective to carry it out that way.*[64] It isn't at all effective to carry it out that way. Planning and doing, while conceptually different, are different parts of the same job.

That professional management *dreams rather than performs* is charitable. Deluded is a better term. By separating themselves from the doing, professional management also separates itself from reality. This separation is characterized by hierarchical command and control thinking that is incapable of anything much beyond a descriptive, enumerative understanding of the business. It ignores variation, collapsing data into descriptive statistics for ease of reporting and digestion. It simplifies, ignoring the messy, dynamic, interacting and confounding factors that are a prerequisite for improvement, choosing instead to apply simple minded heuristics:

- *increasing centralization and direct supervision to yield greater coordination and control, ignoring that it is the least effective and most expensive method of doing so,*
- *pursuing bigger is better to gain economies of scale, in a fantasy world where economies of scale are infinite and diseconomies of scale don't exist,*
- *increasing utilization to improve system efficiency, as long as growing waitlists, increasing cycle times and people dying in emergency waiting rooms are ignored, and*
- *using targets, performance measures and accountability to provide direction and motivation for improvement, for those that*

[61] Theodore Roosevelt, Sorbonne, 1910 as quoted in Augustine's Laws. American Institute of Aeronautics and Astronautics, Inc. 1997

[62] Drucker, P.F. The Practice of Management. New York, NY Harper and Row, 1954 p. 284

[63] Drucker, P.F. The Practice of Management. New York, NY Harper and Row, 1954 p. 284

[64] Wallace J. Hopp and Mark L. Spearman, Factory Physics, Irwin, 1996, p. 34

can't tell the difference between the real Mona Lisa and its paint by numbers counterpart.

The application of these heuristics have made for a very sick health care system in Alberta, and I suspect elsewhere in Canada. A system stuck in endless cycles of man-made crises and chaos. A system where fear and intimidation rules under the rubric of accountability, destroying morale while stifling innovation and improvement.

The cure has been around for some time. Deming introduced the notion of systems thinking for management back in the 1950's. Mintzberg has been drawing the distinction between management as a profession and as a practice for decades. Improved management methods are highlighted in the works of Quality, Improvement Science and Lean practitioners such as John Seddon, Donald Wheeler, Taiichi Ohno, Peter Scholtes, Masaaki Imai, Ronald Moen, James Womack, Daniel Jones, Kaoru Ishikawa, John Shook, Mark Spearman, Joyce Orsini, Brian Joiner and Edward Tufte.[65]

Hopefully, a time will come when professional management ideology and dogma are sacrificed in favor of rational, productive action. Nothing of material significance will change in the Alberta health care system until then.

[65] This list is hopelessly incomplete. My apologies. Edward Tufte is admittedly not a Quality, Improvement Science or Lean practitioner but his books, particularly Beautiful Evidence, Graphic Press LLC, 2006, should be required memorization of business school students and managers everywhere.

Converge Consulting Group Inc.

Mailing: 2617-20 Street SW
Calgary, Alberta
Canada
T2T 4Z4

Phone: 403.266.0061
Web: www.converge-group.com
www.converge-group.net