Systems Thinking for Sound Management in Hostile and Other Complex Adaptive Environments

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Operating "human endeavours" successfully in today's turbulent environments presents a special challenge for managers. While, the essential principles of management are simple, the difficulties encountered frequently lead to managers neglecting these principles, exposing them to unnecessary risk in their drive for success. This paper proposes a fresh, practical view of how strategy, governance, projects and operations, resources and decision-making need to be integrated (whether in commercial, government, non-profit or mixed endeavours) to maximize the prospects of success in today's complex environments. Complexity and turbulence are here to stay, and dictate the need to have in place responsive management arrangements. Any endeavour's chances for surviving and prospering in hostile circumstances, are determined by its own ability to adapt in an intentional and cohesive, but agile manner. The paper presents views derived from practical, wide-ranging experience on:

- **The essential function management and the simplicity of sound management (while accepting its profound difficulty);**
- **Decision-making structures, processes and deployment necessary for sound governance;**
- **Complex adaptive systems behaviour and its implications for decision-making; and**
- **Learning and intelligence processes as key supports for decision-making.**

Introduction

Increasingly today, discourse among leaders engaged in the governance of "human endeavours" reflects concern over the turbulence or "complexity" of the environment in which they are operating.

The authors are associated in a "loose-tight", "virtual business", "Couch & Associates Pty Ltd" (C&APL). The associates are independent freelance managers and consultants, whose work has been largely shaped by the turbulent circumstances faced by their clients' organisations and the need to manage them. The associates' backgrounds cover a wide range of disciplines (e.g. marketing, engineering, financial, IT & HR development, supply chain) and experience (across Government, Commercial and Non-Profit sectors, and including manufacturing, utilities, regula-

tors and service providers in Australia and in Asia), working jointly on assignments as circumstances require, and independently otherwise.

This paper is part of an exercise commenced to draw general but important conclusions from this diverse work base and from observations in management. The experience base is particular in that it reflects observations of a small group of professionals. However, it is somewhat wider than what is experienced typically by individual managers, even in larger endeavours, where the experience base is not used as an effective, collective learning tool. Our aims are to share, corroborate, where appropriate modify, and apply the conclusions more openly and systematically. In this paper, selected conclusions are presented as a series of propositions, to invite comment, rather than as a document presenting final research findings. Further analysis is to be developed and made available on www.capl.biz .

A result of this exercise has been the development and exploration of an alternative perspective on what is required fundamentally for managing survival and success in the more turbulent environments facing human endeavours. The alternative perspective has been learned and developed (often informally as much learning happens in practice), and applied (often implicitly) where appropriate in the course of operating and resourcing the business over the past 15 years.

The paper outlines early views emerging from this exercise, supplementing the outline with brief notes describing fundamental features of:

- Human endeavours from a complex adaptive systems (CAS) viewpoint;
- Complexity as encountered in human endeavours; and
- Essentials for managing under complexity.

These descriptions are presented at an "elemental" or irreducible level that is common across the different contexts that the authors have encountered both in the C&APL business and in their independent businesses. The encounters canvass commercial, government, non-profit, informal and institutional contexts, covering both distinct entities, and divisions, teams and individuals within entities. While description at an elemental level can appear at first to be overly theoretical, understanding is important for underpinning sound management under complexity in all of the contexts.

Background

It is not the purpose of this paper to critique or debate the considerable literature about systems thinking (or "soft" systems practice) in strategic management. The authors of this paper have found their views - e.g. in concepts of meta-resources (potential and actual), decision-making (process and structure), decision support (intelligence and learning) – to be complementary to works by notable authors encountered in these fields. Kim Warren, 2002 in "Competitive Strategy Dynamics", addresses firm performance in terms of resources and capabilities, and writes compellingly of the "hard face of soft factors"; intangible resources "have a powerful impact on business performance over time, by affecting strongly the rates at which tangible resources are won or lost". While "hard" systems engineering has made major contributions to humankind's capacity to implement major physical projects,

its scope has had to expand to accommodate increased complexity, particularly of human requirements (Checkland, 1984). Reflecting these human requirements, recurring themes in modern strategic management concern political feasibility, participation, stakeholder management, alternative futures, organizational change and analytical support (Eden and Ackerman, 1998).

In embarking on this paper the reader is referred to two key concepts (Couch, 2006), concerning "the nature of human endeavour", and "complexity". The term, "human endeavour", used to cover any type of enterprise established and operated for a particular purpose, is defined by its objectives, scope of activity, and its meta-resources (everything that is available, actually or potentially, to be deployed wholly or in part, for the purposes of the endeavour, including, intangible assets, people and value-generating relationships, both internally and externally). A complex adaptive systems view of the endeavour highlights (a) its open nature, having no inherent or fixed boundaries, and (b) its agent-based nature with "agents" having uncertain or changing roles and relationships, and having degrees of autonomy in the manner and effectiveness of their deployment and actions in (or contrary to) the interests of the endeavour.

"Complexity" is an often used but fuzzy and frequently misused term. It is helpful to think of complexity manifesting itself at three levels or orders, (a) size or scale, (b) inter-relatedness, and (c) adaptation. In the CAS sense it is not **size** or **scale** (e.g. of a project), including variability, per-se that generate complexity. Rather, it is the extent or density of **"inter-relatedness"** of issues and interests; where the resolution of one issue, which may affect any single interest group, depends on and affects the resolution of other issues and impacts on other interest groups, all demanding satisfaction. Finally, at the third level, **adaptation** describes the willingness of interest groups (or "agents" having particular interests) to combine and to "escalate" the issues through opportunistically seeking to further their private interests, often at the endeavour's expense.

Overview of results

Key to the alternative perspective foreshadowed earlier is a new understanding of "management", and particularly its focus on: (a) the essential tasks inherent in the management function; and (b) the way that management functions are structured and deployed throughout an endeavour.

To summarise:

1. Many surveys highlight new and severe challenges facing managers trying to organise their endeavours and cope with information overload in the turbulent environments where they operate. (Future Monitor Survey, 2006 is one example) Such challenges include competition and regulatory intervention, utility reforms, globalisation and work across cultures, perverse behaviour and corrupt practices, terrorism risk and security, employment and intellectual property issues, technology development and the increasing rate of transactions that new technology enables. While they are all different, and examples only, it is when such matters converge disruptively, that conventional approaches to management fail.

2. In a systems theory sense, these turbulent environments are behaving as Complex Adaptive Systems (CASs). For an endeavour, to survive and prosper within a complex adaptive environment, it must itself develop attributes of a CAS (as in Ashby's Law - Stafford Beer, 1995). Endeavours that remain captured by rigidities (e.g. in organization, information handling, conducting communications, and in hiring, training and developing staff), and facing complexity (critical issues arising with little notice, through activist, opportunistic, hostile behaviour) are risking their survival and prosperity by not establishing the new levels of agility needed to adapt. This agility:
    - Needs to be initiated from the governing board;
    - Needs to extend to all who are engaged in management and operations;
    - Requires that the endeavour's people have access to, and use, material information, and are learning continuously while making decisions and performing their work;
    - Should emphasise simplicity and integration, rather than impose additional hurdles of management complication; and
    - Needs to foster openness and innovation.
3. For this purpose, endeavours need to foster a new, dynamic understanding of management. The authors are proposing an understanding in which traditional static views of management tasks (whether focused on management activities, such as planning, organizing, staffing, implementation, and control, or focused on distinct functional layers, such as strategic, tactical and operational layers) are extended by a dynamic view of the management function. In this dynamic view, the elemental building block of management is decision-making.
    - Decision-making is conducted with the effect of deploying resources (or meta-resources) available to the endeavour in order to pursue the strategic directions and aims that will make for its success.
    - When distributed throughout the endeavour, streamlined but rigorous, and conducted in a cohesive, iterative, recursive, multi-level, framework, decision-making is able to transform a conventional organization into a CAS.
    - Decision-making needs to be efficiently distributed at all levels where management decisions are made, structured transparently, aligned through clear accountability relationships to the strategic directions and aims of the endeavour, and enhanced by intelligence to which decision-makers (whether recommenders or approvers have ready access), and a commitment to continual learning.
4. This view represents a progression in management thinking, (a) moving beyond Taylorism, with its focus on outcomes and objectives, and Deming Quality, with its focus on technical process and systems (Dalrymple, 2000), (b) extending the idea of "knowledge workers" as anticipated by Drucker, 1993, and (c) resolving conflicts between the traditionally conflicting "hard" or systems

schools and the "soft" or human relationships school of management thought (O'Connor, 1999).

This perspective has application to defence, where CAS thinking is being actively researched, as well as in business, the public sector, and non-profit enterprise. Increasingly in the authors' view, explicit CAS thinking will be widely and explicitly used for strategy development and implementation in all sectors.

Decision-making: The essential role of management

While making sound decisions can be difficult, the essential principles are simple; and all value-generating employees can and should know them (or should learn and continuously improve their ability to apply them). Everyone, i.e. everyone who has custody of resources, and needs to make judgements about exercising that responsibility is in some sense a manager. While different workers operate at different functional levels, this covers everyone in the endeavour whose work cannot be automated. At the more operational levels, larger numbers of workers may be making many more, incrementally smaller decisions, compared with senior managers working at high functional levels making fewer larger decisions. At all levels, however, value is still being captured (or destroyed). When anyone in an endeavour is not making sound decisions that are in the best interests of the endeavour, then value (or the prospect for success in the endeavour) is diminished.

Sound decision-making requires:

- Sound **decision-making process** (that include gathering material information [from intelligence, consultation & research], identifying objectives and issues, generating and evaluating alternatives, planning for implementation, recommending for approval, implementing, and reviewing and adjusting – see Table 1 for key stages to be included in a sound decision-making process);
- Sound **decision-making structures** (that provide for (a) transparency and independence as far as practicable between essential stages, and (b) assignment of single point accountability for implementation, including risk and value management, organisation, staffing and leadership, operation, milestones and performance, controls and reporting, securing of resources and meeting of costs); and
- Sound **decision-making content** (that covers (a) selection of driving strategies for the endeavour [or part of the endeavour for which the manager has responsibility], and (b) deployment (including delegation) throughout the endeavour of decision-making functions, over and above the other usual matters to which managers give attention.

All supported by:

- **Intelligence** (covering what is happening [environment scanning] or anticipated, and how things work and connect [modeling] in the endeavour and its environment [internally and externally], and what determines success (or fail-

ure) [fitness]; and

- **Action learning** (providing, where and when required, the essential skills and understanding of principles for decision-making, sharing of experience [of both success and failure], continuous improvement).

Space limitations prevent drilling down in this paper to the next level of detail on these principles. Table 2 lists key features that emerge from their application. It is unfortunately common to observe: claims by decision-makers that they have no alternatives; unnecessary or partial decisions that will fail to generate end-benefits; inefficient report and submission writing procedures that simply waste resources rearranging others' work; decisions that are not assessed for their feasibility, their alignment with the rest of the overall endeavour, or their impact on other interests; and no provision for implementation, control, costs, or progressive review and adjustment. The key to formalising decision-making lies in learning, understanding and tailoring to the endeavour rather than in fostering a "tick-the-box" approach.

As a matter of practice, decisions made in the course of managing an endeavour are aggregated into sets covering all aspects of its operation, as illustrated in Figure 1. For example key operational decisions in a business will be aggregated to address such functions as, production, quality, maintenance and operations, service, sales, procurement, inventories, capital, HR, IT, logistics, projects, and their management.

The essential elements of the decision-making process, properly learned, understood and implemented, promote integration (as outlined below) between the endeavour's strategy and governance at the highest functional level, and the management of its projects and operations.

Integrating strategy, governance and operations

The key challenges for governance of any human endeavour are:

- **Strategy** - Developing, adopting, articulating and communicating the strategic directions and aims by which the endeavour is to conduct its projects, operations and management; and
- **Implementation** - Ensuring that the strategic directions and aims are implemented with integrity.

Sound governance is determined by the way that decision-making is conducted, structured and distributed, since it is the underlying mechanism that will determine an endeavour's likelihood of success.

To combine agility and governance, decision-making needs to be:

- Efficiently deployed throughout the endeavour to its projects and operations;
- Rigorous, streamlined and accessible to all managers; and
- Aligned consistently to the overall strategic directions and aims of the endeavour.

Stage	Comment
Intelligence	Characterising the current situation and projections in the endeavour and its environment. This require information or intelligence (as far as is known and is material) concerning the endeavour and its environment.
Consultation & research	Consultation with (or equivalent research on) stakeholders impacted by the decision, or if not practicable, those who represent them or understand their perspective
Objectives and issues	• Describing gaps to be closed (social, economic, business and interest group gaps) covering waste to be reduced, opportunities to be seized, and stakeholders to be satisfied; • Articulating broad aims and desired directions, and success / failure criteria; • Identifying issues arising and criteria for their resolution.
Alternatives	Generating then evaluating, against the objectives, alternatives for producing priority benefits, and selecting alternatives to be recommended based on the evaluation
Plan	Preparing the plan of action for implementing the recommendations, and the management arrangements
Recommendation	Framing "implementable" recommendations for approval (or amendment)
Approval	Giving effect to the recommendation (as recommended or amended)
Implementation	Implementing the plan as approved or amended.
Review	Monitoring, reviewing and as necessary adjusting the decision as commitments are made and results emerge

Table 1 *Key stages in the decision-making process*

Decision making with these characteristics must be part of an integrated chain of accountability that traverses the endeavour's functional levels. This is secured through:

- The provision of intelligence required to inform decision-making for a business unit is "two-way", but includes information from the higher functional levels within the endeavour, i.e. (a) the strategies for directing the endeavour, (b) what makes for success of the endeavour, and (d) how things work and connect.
- Explanatory business models (information on "how things work and connect" within the endeavour and its environment) address accountability relationships between functional levels, as well as service relationships between units in and beyond the endeavour.
- Individual links in the chain of accountability relationships are formed explicitly, e.g. by transparently distinguishing recommendations and approvals for decisions, and by explicit monitoring and controls.

Feature	Comment
Intentional choice between alternatives	Without alternatives a decision is not needed - the decision compares and selects the best
Necessity / sufficiency for creating value	The decision should be what is required and sufficient to give effect to a course of action for generating and capturing benefits (or establishing options)
Streamlined process	Avoidance of long reports and re-writing that does not add value
Intelligence support	Access to and use of relevant information for environment scanning, business modeling and aligning of interests
Learning support	Sharing, promotion and improvement of decision making skills and judgement
Feasibility	Assessment that implementation will work and benefits will be delivered, allowing for risks in functionality, quality, timeliness, and demand
Strategic alignment	Consistency with the endeavour's strategic directions
Governance	How it will be known that the decision was sound and its implementation is working
Implementation	Single point accountability for implementation (including management of value and risks) and control
Consultation / research	Account taken of complex interests, and reactions anticipated through consultation and research
Costing	Provision made for costs and deployment of resources required for implementation (allowing for risks), including timing or delay costs
Review	Planning for monitoring and adjustment at critical points

Table 2 *Essential features of decision-making*

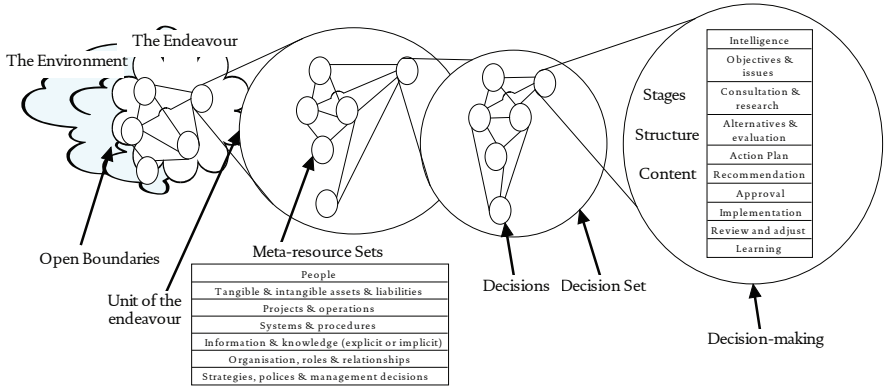

Figure 1 *Decision-making context: The Endeavour in its complex adaptive environment*

- Action planning (with single point accountability for implementation tasks), for a decision, together with monitoring and reporting ingredients in the decision-making process provide the basis for performance measurement.

A decision that concerns the endeavour's operations will take account of the agents impacting materially on those operations (and those agents' principal relationships, agendas and interests), such as:

- Suppliers and users of the endeavour's finished or intermediate products and services;
- Customers who are paying for them;
- Personnel of the endeavour;
- Sponsors (supervisors, managers, owners, boards, directors and controllers, and investors) in the accountability chain who are bearing the risks of performance;
- Regulators who can impose obligations on the endeavour and enforce compliance;
- Interest groups that can emerge (in the CAS sense) or organise to escalate issues and use their influence to do so - customer interest groups, shareholder activists, unions, environmental and social responsibility interests;
- Others who can impact, directly or indirectly on the success of the endeavour, including competitors of the endeavour and key stakeholders;

Conclusions

Application of the principles, described briefly in this paper as part of the C&APL project, has been found in practice to be effective for supporting key decisions and their contribution to strategy, governance and operational management in a range of endeavours. They do not make decision-making easy, but understanding and applying the principles assists directors of endeavours to manage decision-making and governance, and to have confidence in the decisions of their less-senior managers. By removing the commonly ad-hoc nature of decision making the process can be streamlined and made rigorous. Articulating, promoting and learning the simple principles, allows decision-making to be more efficiently distributed through the endeavour, giving it an agility not possessed in rigidly directed organisations.

The approach outlined in this paper views management not as a set of procedures, but more fundamentally in terms of distributed, integrated and aligned, accountable decision-making. The resort to fundamentals is oriented to the needs of endeavours to develop their agility for succeeding in emerging complex adaptive environments. Attention to basic principles will provide mechanisms that are based on: (a) value in service relationships (e.g. customers and service users); (b) Competitive performance and cost management that provides confidence to managers and investors / sponsors; and (c) Positive reputation and preference for the endeavour in its dealings with all stakeholders.

A key requirement is that management must be simple, accessible, and useable by all who have custody of resources in the endeavour, but also rigorous in achieving practical and sound results in which investors and other stakeholders can have confidence. Decision-making that neglects these simple principles, exposes the endeavour to unnecessary strategic and performance risks.

There is a sense in which the approach outlined in this paper may be described as a "return to basics". While that is a result, it was not the original intent in forming the proposals. Historically, it is a common initial reaction to new theoretical frameworks that they merely restate principles that are already well understood, and the authors recognize the hazards of trying to funnel observations from a wide experience base into a few general propositions. This paper marks an early stage in this exploration and research project. The principles outlined are being articulated in light of the authors' interests, experience and study. Interested readers can contact the authors by email gcouch@capl.com.au or through www.capl.biz to be kept informed, and more importantly to interact.

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