A PARADIGM SHIFT - AN APPLIED SYSTEMS THINKING APPROACH TO HEALTH AND SAFETY MANAGEMENT – AN ABRIDGED PAPER

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Introduction

Traditionally, health and safety performance and business value are managed as independent functions sometimes in opposition with each other (Veltri *et al*, 2007); therefore, contemporary researchers are producing compelling profit/commercial orientated motivators for integrated health and safety practice. Recent research demonstrates that occupational health and safety performance offers commercial organisations opportunities for differentiation by increasing its business value and thus profitability (Maharaj, 2007a).

Being able to articulate the relationship between occupational health and safety and business process has always been an elusive undertaking (Veltri *et.al.*, 2007). Although research carried out by the European Agency for Health and Safety at Work cited in Maharaj (2007b) highlights the business benefits associated with fully integrated systems of management, there is no research into successful methods of integrating health and safety into strategic and operational decision making resulting in corresponding improvements in operational efficiency and/or organisational effectiveness.

Objectives

This paper summarises how the philosophy of applied systems thinking and the practicality of Interactive Planning (IP), a decision making and problem solving tool emanating from the management sciences discipline, was used to integrate an occupational health and safety management system (OH&SMS) with business management systems (BMS). It reflects on an intervention conducted at a UK based power station whose Station Director sought to seamlessly integrate health and safety with management decision making by aligning health and safety objectives with business objectives and making health and safety sufficiently attractive to be 'owned' by most people.

The Role of Systems Thinking in formulating OH&SMS Transformation Methodology

Standards based OH&SMS such as OHSAS 18001, ANSI Z10, HS(G)65 and others adopted by organisations have failed to reduce the number of catastrophic events worldwide. Researchers, regulators and government review boards across the globe argue that the dysfunction between health and safety management systems and business process is one of the key triggers or root causes for such events (Maharaj, 2007a).

Criticisms of BMS from within its discipline are similar. Prof Mike Jackson (2004) as cited in Maharaj (2007b), an applied systems and management science theorist, claims that narrowly focussed or simple management solutions fail because they are not holistic or creative enough. He further argues that such solutions are not holistic because they concentrate on parts (functions) of the organisation rather than on the organisation as a whole.

For example, consider the simple casual loop linking accident prevention and accident frequencies in Figure 1. It shows that as the number of accidents increases, the amount of accident prevention activity increases; and as the accident prevention activity increases, the number of accidents decreases.

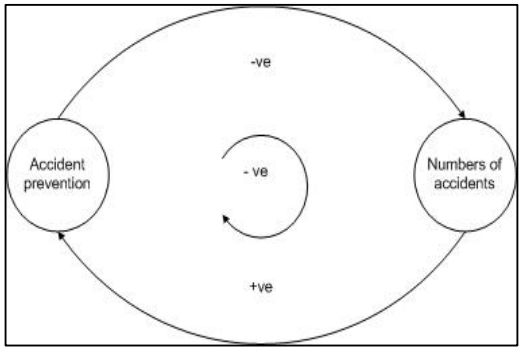

Figure 1: Causal Loop Diagram (Adapted from Waring 1996)

Systems thinkers will recognise that the causal loop in Figure 1 is balanced because it represents a relationship in a highly controlled environment. In systems terms, referred to as a 'closed' system. Closed systems are easily balanced because they not take into account the effects of external factors such as human factors, employee interpretation of the accident prevention message and so on. Accommodating external factors, as 'delays' in a causal loop diagram will yield a positive outcome thus creating an 'open' system which is imbalanced – see Figure 2.

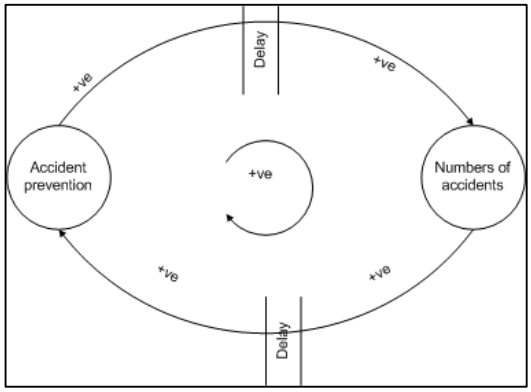

Figure 2: Imbalanced Causal Loop Diagram with Delays

Closed loop systems such as previously cited OH&SMS models (specifications) cannot be reliably used to develop systems of management involving people because by definition, closed systems thinking is essentially desensitised to the perceptions, views and beliefs of multiple stakeholders within an organisation.

In this study, a business focussed OH&SMS that was incorporated in activities, systems, perceptions and behaviours of its term contractors, employees, stakeholders and corporate policies was required and selecting a closed systems approach as a transformation technique would fail to meet the objectives of this intervention.

Finding an 'open' system OH&SMS transformation technique proved challenging. I approached an applied systems thinking lecturer at the Lancaster University Management School, Dr Giles Hindle, previously a student of Prof Mike Jackson, who recommended that I use Interactive Planning, a management problem solving technique, developed by Wharton Emiterus Professor Russell Ackoff – one of the world's top management thinkers. Prof James Leeman, the then SHE Director at DuPont Speciality Chemicals (US) had successfully used IP to transform DuPont's centralised OH&SMS when the speciality chemicals division decentralised its various operations.

IP's true strength lies in its ability to create a platform for driving change from the bottom up, allowing input from the end-users, whose work frequently exposes them to danger. In its methodology, Interactive Planning uses a five-stage process to facilitate change within the organisation. The five-stage iterative process consists of:

1) Mess Formulation: which makes sense of the organisational and management situation;
2) Ends Planning: which facilitates the creation of an idealised system of management;

3) Means Planning: which identifies barriers to implementing the idealised system and devises strategies to overcome these barriers or adjusting the idealised design to deliver the same outcome through an alternate route;
4) Resource Planning: which determines what resources are needed to seamlessly implement the idealised system; and
5) Implementing and controlling the idealised (or proximate) designs.

Whilst the detail of the five-stage process is outside the scope of this paper, it is worth considering the key operational and organisational benefits derived from this transformation process.

Findings

On completion of the intervention component of the study, I found that using IP not only transformed health and safety management at the Power Station but it also contributed to business value through creating operational and organisational improvements.

OH&SMS Transformation and Business Value

The idealisation phase of IP resulted in the creation of ten 'Directives' that aligned health and safety with the Stations' business, operations and work processes. Those developing the idealised design found that structure and content of the Directives naturally deviated from the traditional *'policy- responsibility-arrangements'* approach of HS(G)65 and modular structure of the OHSAS 18001 specification (Maharaj, 2007b). In keeping with Leeman's study as cited in Maharaj (2007b), each Directive was developed with a purpose, function, process and structure in mind. Each Directive adopted a distributed model with respect to ownership by making the department(s) accountable for its implementation. This distributed ownership is vital to the idealised OH&SMS making sustained operational contributions. A fundamental contribution to business value was realised from this re-organisation and analogous repositioning of health and safety ownership. Moving health and safety away from a regulatory domain aligned health and safety with all forms of business activity. This enables better integration with operations and decision-making processes (Maharaj, 2007a). The main beneficiaries of this re-organisation and repositioning are employees and contractors. This intervention ensures task orientated training, skills development, apprenticeships, mentoring, job planning, job execution and job promotion by avoiding the barrage of health and safety information and training normally associated with a hazardous site. The intervention also contributed to improving operations and organisation at the Power Station.

Operational Contributions

Improving health and safety practice was not the sole intent of this intervention study. For health and safety to be recognised as integral to business, the intervention had to deliver business improvements in order to clearly demonstrate that effective safety management is about a systematic approach to management and operational decision making. Operational contributions to business value were identified through the Ends Planning stage of IP. By adopting Leeman's approach, I subdivided this stage into the Consumer Group phase and Designer Group phase. Members of the Consumer Group undertook positional mapping of their departments and respective job functions. Through a co-operative inquiry interview process, they extracted ***42*** operational improvements. Although these operational improvements all have health and safety implications, improved operational efficiency dictated numerous task modifications or redesign. Consequently, a significant number of task related hazards were eliminated or risks reduced. Value gains

from a commercial standpoint were realised through designing the task in accordance with the needs local operators enabling efficient and effective task execution (Maharaj, 2007b).

Organisational Contributions

Organisational contributions made by the transformation process include the realignment of health and safety communication and ownership; recognition of departmental interdependency and work integration; and consultation and participation. Organisational barriers that were overcome by this intervention include: i) resolving communication conflicts ii) creating a guiding coalition at the coal face and iii) improving interdepartmental co-ordination and co-operation (Maharaj, 2007a). Examples of organisational improvements from a business effectiveness and risk standpoint included: All departments being made accountable for controlling operational risk created by them and providing detailed risk/hazard information to other departments; IP helped overcome an isolationist view of departmental operations; improved interaction between outage and work planning functions enabled adequate resourcing of long term or high hazard projects; staff felt more engaged in the bottom-up transformation process and allowed them to contribute freely and constructively without fear of reprisals; many staff previously worked in isolation and had very little knowledge of where information pockets existed around the power station - IP broke down those barriers and staff are able to identify in house subject matter specialists; skills (including health and safety) needs analysis and apprenticeships became a partnership function between each department and the training department with the realisation that better interaction allowed for effective operational planning and risk control.

Conclusions

This intervention provides compelling evidence that health and safety does deliver business value and will hopefully silence those sceptics who take a purely economic perspective on occupational safety and health. It also adds greater credibility to the commercial and economic motivators for good health and safety management by shifting the safety-business relationship from a loss control paradigm towards one that achieves operational effectiveness and competitive advantage. These findings conclude that the study has addressed a major shortcoming in health and safety literature by adding to the growing body of evidence that integrating health and safety management can contribute to the business value of an organisation, both at operational and organisational levels. Perhaps public facing entrepreneurs such as Easyjet's founder Sir Stelios Haji-Ioannou who, BBC Radio 4's On the Ropes programme in 2003 said; *'If you think safety is expensive, try an accident'* should champion this change in paradigm.

References:

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