

REAPPRAISING VALUE METHODOLOGIES IN CONSTRUCTION FOR ACHIEVING BEST VALUE

Steven Male¹, John Kelly², Marcus Gronqvist³ & Drummond Graham⁴

¹*School of Civil Engineering, University of Leeds, Leeds LS2 9JT UK*

²*Glasgow Caledonian University, Glasgow G4 0BA UK*

³*Value Solutions Ltd, Ilkley LS29 9NE UK*

⁴*Thomson Bethune, Chartered Surveyors, Edinburgh EH3 6J UK*

ABSTRACT

The year 2007 marks sixty years in the life of Value Management (VM). It is a team based methodology, originally from the US manufacturing sector of the 1940s, and founded on the technique of function analysis. North American thinking dominated developments in VM for the first four decades. In the 1980s and 1990s VM internationalised into construction and during the past ten years developments in principally Europe, Australasia and South East Asia (notably Hong Kong), have seen divergent thought emerge. This has also been reflected in national Standards, and, allegiances to particular professional associations. Empirical evidence from the academic literature suggests that VM remains ill understood, and, lacks professional standing; it has ongoing barriers to successful implementation and has been quoted as being in decline or at the very least having a dire status. Developments in value management are identified, and lessons from the literature are distilled and re-examined. Results from a programme of action research conducted by the authors within a grounded theory framework, building on a benchmarking study conducted in the late 1990s, are presented and include a value methodology shaped around generic study styles. The implications for its continued use in construction and other practice settings are also explored. Keywords: Benchmarking, Value Analysis, Value Engineering, Value Management, Value Management Standards, Value Methodology.

BACKGROUND

Value management is a team based methodology utilised to deliver a product, service or project at optimum whole life performance and cost without detriment to quality using function analysis.

The early development of value management has been dominated by North American thinking (Dell'Isola 1988, Fallon 1980, Kaufmann 1990, Miles 1972, 1989, Mudge 1990, O'Brien 1976, Parker 1985, Zimmerman & Hart 1982). During the late 1960s and into the 1970s, VM diversified internationally primarily through the manufacturing sector into Japan, Italy, Australia and Canada (Dell'Isola 1988). In the 1980s and into the 1990s, however, a turning point occurred with the use internationally of VM in construction. Different perspectives began to emerge internationally; some early adopter countries in manufacturing took forward a franchised version of VM from the US methodology, such as Japan and Korea, whilst others took up the methodology and subsequently melded it to take account of their national markets and cultures. In Australia, for example, whilst Eric Adam (1993) remained more closely allied to a North American perspective, Roy Barton from the University of Canberra, as a result of his study tour to North America, became an active proponent of contextualisation in Australia. The ANZ Standard discussed below reflects this stance. In the UK, Green (1992, 1994, 1996a, 1999) argued for a close link between soft operations research, Group Decision

¹ s.male@leeds.ac.uk

² j.r.kelly@gcal.ac.uk

³ marcus@value-solutions.co.uk

⁴ dgraham@thomsonbethune.co.uk

Support methodologies and SMART value management; Kelly and Male (1993), consolidating their work from the mid 1980s on North American VE, followed a similar and almost simultaneous trajectory to Roy Barton during that period and contextualised VM in the UK, subsequently developing it much further strategically and tactically (Kelly, Male and Graham 2004); Norton and McElligot (1995) adopted a hybrid practitioner focused approach for the UK, whilst Thiry (1997, 2001, 2002) has taken the methodology clearly into the strategic phase of programmes and projects, arguing that in more complex environments VM team members need to make sense of the ambiguities and complexities confronting them in studies. He argues that more time not less time should be given to VM studies in these situations. Recently, in South East Asia debate on contextualisation of an appropriate methodology has increased, for example, Cheah & Ting (2005), Fong (2004), Liu & Leung (2002), and, Shen & Chung (2002). This has enforced further developments in VM thinking and practice; resulting in a diversity of definitions and procedures and official standards.

The SAVE International Standard uses the term value methodology (VM), highlighting that it includes the processes known as value analysis, value engineering, value management, value control, value improvement and value assurance (SAVE1998). The Standard is all embracing and could be interpreted as a political attempt at heading off the threat posed by the wider definition of value management emerging from Europe, and, Australia and New Zealand, which are more closely aligned in their thinking. Whilst SAVE International does not define the methodology per se, the Standard adopts an approved Job Plan, a Body of Knowledge, typical profiles of value managers and value specialists, and the duties of a value organisation.

The European Standard for Value Management (BS EN 12973:2000) defines VM as a style of management, noting its evolution from value analysis on products in the 1940s into services, projects and administrative procedures. It also notes that contemporaneously other methods and management techniques also based upon the concepts of value and function have developed, such as, Design to Cost and Functional Performance Specification. The Standard indicates that the goal of value management is to reconcile differences in view between stakeholders, and, internal and external customers as to what constitutes value.

The Australian New Zealand Standard (AS / NZS 4183:1994) for value management in its Forward defines it as a structured, systematic and analytical process which seeks to achieve value for money by providing all necessary functions at the lowest total cost; consistent with required levels of quality and performance. The Standard sees the VM process as being centred on a participatory workshop involving a multidisciplinary, representative group of people working together to seek the best value solution for a particular situation. Three critical success factors in the VM process are identified in the Standard, namely, the methodology employed, the commitment of those involved and the way in which the total process is facilitated and managed. The new draft Standard DR 04443 (Standards Australia 2004) has adjusted the definition, indicating that VM is a structured and analytical group process which seeks to establish and improve value and, where appropriate, value for money in products, processes, services, organizations and systems. It also acknowledges that value-for-money is closely associated with the more traditional applications of value analysis and value engineering in activities such as the design, procurement, operation and disposal of entities. The VM study process is again seen as centred on a participatory multi-disciplinary workshop. DR 04443 now acknowledges five essential elements in the VM process; the prescribed study process, commitment of those involved, management of the process, executive commitment and effective facilitation. The new draft Standard uses the term Work Plan instead of the Job Plan originally used by Miles (1989) and adopted in the ANZ 1994 version.

In the UK the past two decades have seen growth in the development and practice of VM at differing intervention points across a wide range construction project types, and, in organisational situations. During the same period risk management has developed, often closely associated with value management as a complementary service. It would be fair to say, however, that the continued developments in value management appear to have reached a

plateau, and, whilst it is still being deployed there are clear signs that development is slowing, perhaps stagnating. Fong (2004) has confirmed this through a recent survey of US and UK practitioners. He sampled randomly practitioners from SAVE International in the US (N=85) and the Institute for Value Management in the UK (N=24). The dominate sectors for its application from the survey are construction (22%), manufacturing (12%), transport (11%), management (11%), Government (10%) and systems and services (9%). His sample indicated that whilst VM is seen to have a theoretical base and is not driven by practice alone (77%), is it seen as lacking a professional image (79%) and in decay (85%). The primary reason given for its decline is the ambiguous image (30%). The principal reasons given for the use of the methodology include cost reduction (24%), performance improvement (14%) and auditing (11%). Cheah and Ting (2005) add further insights from a sample of experienced managers attending an international VM/VE training course (N=54). Whilst 68% were supportive of using VM/VE in construction, possible causes of its limited application in South East Asia include lack of support from those in authority (61%), inflexibility in contractual provisions (61%) and poor understanding about the methodology (59%). Linked to this is an initial perception that it is just a cost cutting tool, and, that close alignments exist between the use of the term 'value' in VM/VE and its use in allied management techniques such as TQM. The most serious impediment is seen a lack of time to implement it on projects (65%); although conflicts of interest (48%) coupled with a lack of communication amongst stakeholders (43%), and, a divided / segmented project decision making process (39%) also came high on the list. Interestingly, the last three are the very reasons for adopting VM/VE as a more integrative process.

To summarise and draw the brief review of Standards together with empirical evidence, there remains clearly a divergence of opinion internationally about the exact definition of value management. There is a closer alignment between the British / European Standard and the Australian New Zealand Standard. The former sees VM as management style, also again noting its similarities with other management approaches; whilst the latter also draws attention to its wider organisational use and the workshop component. Both address the issues of bringing stakeholders and/or multidisciplinary teams together to address value, quality and performance, and, not just on projects. The SAVE Standard, whilst it embraces a diverse range of terms under the value methodology does not address the underlying methodology per se. The move of the British / European and ANZ Standards away from an American influence is also clear. Empirical evidence aligns VM to a cost reduction methodology or audit process, presenting a more negative than positive image of value enhancement. Equally, this also opens it up to additional competition from other similar methodologies. Two strands appear to be self reinforcing in terms of VM's stagnation from Fong's data; a lack of professional standing, addressed previously by Male et al (1999), and, its indistinctiveness from other management techniques. This has, to an extent been reinforced by comments made in the British / European Standard, and also by Cheah and Ting's sample. Many of the comments identified by Cheah and Ting were raised by collaborators in the authors' international benchmarking study (Male et al 1998a, 1998b), where the biggest danger to VM's continued developed was seen at the time as the drive towards tick box approaches by clients and the economic drive towards shorter studies; little has changed since then on both counts in the UK. The former certainly down plays any professional role and the exercise of independent judgement informed by theory (Male et al 1999), whilst the later goes against the recommendations of Thiry on allowing sufficient time for studies. In the UK, further development is also now being hampered by VM/VE being seen as closely allied to workshop facilitation, which is only one of the key success factors identified by many researchers, writers and Standards dealing with VM.

Against this background, the next section draws together an ongoing developmental programme of studies in value management conducted by the authors. Over a period of a decade that research programme has seen VM move from a focus on predominantly workshop based activity to one where the service has become advice laden, and, the authors' value

management paradigm shift to one of a change-driven methodology to underpin effective project and organisational value-based problem solving.

DECLINE OR A PHOENIX RISING FROM THE ASHES?

Fong (2004) portrays a particularly disconcerting view for the future of value management in the USA and UK. Cheah and Ting (2005) use terms such as the “dire status” of value management. This section sets out the authors current thinking in terms of the continued developments of VM as a service, drawing on earlier benchmarking work internationally. Initially within this section a research philosophy and infrastructure, and, associated methodology is presented, followed subsequently by the outcomes from a programme of action research that has been ongoing since the early 1990s within a grounded theory framework.

Methodologies Adopted within Value Management Research

Action research and grounded theory are mutually reinforcing methodologies, and, have been applied with considerable success in enhancing the authors understanding of VM. Action research is an approach to applied social research where the action researcher and ‘client’ collaborate in the development of a diagnosis for and solution to a problem; it normally involves designing interventions in social processes and contributes to the stock of empirical knowledge from real world situations (Bryman 1989, 2000). Central to action research is involvement; and improvement of practice itself, of understanding by practitioners, and, the situation within which action research takes place (Robson 2002). Since action research tends to be total system focused, it has close links with the real world soft systems methodology advocated by Checkland (1981). Grounded theory, with its foundations in symbolic interactionism, was developed as a qualitative approach to research originally by Glaser and Strauss (1967). The fundamental principles behind the approach are an enhanced understanding from fieldwork, theory grounded in reality, social meaning related to behaviour and action, that experience for both the subject(s) under investigation and the researcher are constantly evolving and must be taken account of in the research process, and, finally, an emphasis on process, change, and the variability and complexity of life (Goulding 2002).

The impetus and research infrastructure for the authors’ continued work in value management came from a number of studies conducted for the Royal Institution of Chartered Surveyors (RICS) and presented in Kelly and Male (1993). Subsequently the UK’s Engineering and Physical Sciences Research Council funded a twenty-six month international benchmarking study into value management. The detailed research methodology for that study is set out in Figure 1 below.

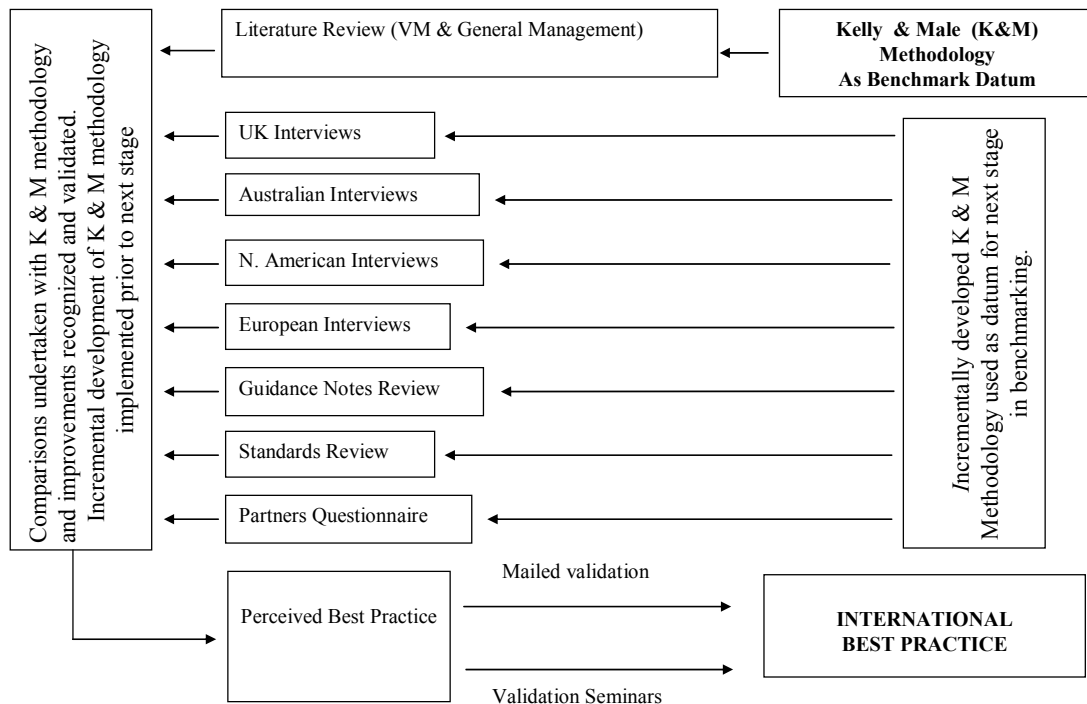


Figure 1: International Benchmarking Methodology.

Source: Kelly and Male (1998a)

Initially, a benchmark datum was elicited by the authors from earlier RICS research and a series of action research studies already undertaken to that point in time. The datum was not dissimilar to that presented in Figure 3 below. Fieldwork was conducted in North America, Australia, the UK and mainland Europe using structured interviews and the benchmark 'datum' to elicit data on the practice of the VM process, and, to gain insight into a host of other relevant issues such as culture, legislation and certification. Fifty-eight structured benchmarking interviews were conducted during the course of the project, taking on average between one to two hours each. Fourteen were conducted in Australia, eighteen in North America, twenty-one in the UK and five in Europe. The interviews revealed, as expected, a diverse range of VM practice.

In the UK, best practice practitioners were identified by cross-referencing between those interviewed and other organisations considered to be 'best-in-class'. Due to the logistics involved in adopting a similar method for gaining access to best-in-class VM practitioners in both North America and Australia, an alternative method was adopted for these continents. In America the research team attended a Society of American Value Engineers (now SAVE International) conference, opening their event with a workshop designed to explain the research project and recruit best-in-class practitioners as collaborators. A similar workshop/seminar was held at the Institute of Value Management Australia (IVMA) for the same purpose. The outcome from the study was an internationally benchmarked best practice methodology for value management described in Male et al (1998a) and Male et al (1998b).

From 1998 onwards the authors have subsequently tested for robustness and enhanced further that methodology through conducting in excess of two hundred action-research focused

industrial studies and systematically analysing the outcomes. A further objective has been to identify if there are as many study styles as there were interventions, or, if there are underlying generic structures and process that could be identified within value management.

Studies have used the VM methodology on value-for-money reviews with a range of blue chip and government clients on their major projects; studies for clients wishing to develop long term partnering and supply chain arrangements; studies for consortia or clients involved in PPP/Private Finance Initiative, the UK's Ministry of Defence Prime Contracting and NHS Estates Procure 21 procurement systems; and, studies for clients or consortia involving organisational change and restructuring, implementing information technology systems, or, business process re-engineering of projects, teams and departments/divisions. This has created a "rich picture" comprising elements of structure, process and organisational / project climate for value management (Checkland 1981). It has enhanced our interpretation of past, current and potentially future VM practice in line with the idea of the reflective practitioner using "reflection-in-action" (Schon 1991). The methodology has now become a powerful, structured, and robust system for effective and efficient change-oriented problem solving within projects and organisations.

The Way Forward: Designing and Implementing Study Styles?

Irrespective of the type of value problem addressed, Kelly, Male and Graham (2004) have proposed three generic phases within a value management study:

- **The Orientation and Diagnostic (O & D) Phase** involves the value manager(s) and value team preparing themselves for the study, with the former meeting with the commissioning client, project sponsor, and key stakeholders involved in the study, reviewing documents and possibly conducting interviews and briefings. The approach chosen by the value manager may also include understanding and structuring the value problem in detail, exploring possible competing value problems, discussing promising solutions and exploring the way forward on completion of the Workshop Phase. The agenda for the Workshop Phase will be developed and the method and manner in which the workshop conducted ascertained. The implementation of options and solutions developed from the workshop phase would also be considered.
- **The Workshop Phase** involves a forum where alternative and / or complementary stakeholder and multi-disciplinary perspectives on the value problem are brought together to explore and reach a way forward, hopefully through consensus and agreement. Normally, a study report is produced after the workshop, including an action plan to ensure that value solutions and options will be implemented in the post workshop phase.
- **The Implementation Phase** was recognised in the international benchmarking study as one of the key areas where value management falls down. The authors have now adopted a range of approaches to ensure this problem is minimised; implementation meetings and workshops have been used, and, as a minimum during the Orientation and Diagnostic Phase, an implementation strategy will be discussed with commissioning clients. Wherever possible those responsible for implementation will be interviewed and identified in the action plan at the close of the Workshop Phase.

Subsequent to the publication of the value management benchmark, the authors have increasingly focused on identifying different value management study styles. Kelly, Male and Graham (2004) define a study style as the outcome and configuration of the VM process that is required to intervene in a particular stage in a project life cycle; or, in an organisation, process, product or service delivery. It represent a combination of method, process, and, approaches to facilitation during VM Workshop Phase. An important starting point for identifying study styles is the fact that the benchmarking research identified a series of intervention points for projects, with clearly identified approaches in terms of focus, value team composition, method and duration. The studies conducted at value opportunity points

using the above generic process are: (i) a Strategic Briefing Study, (ii) a Project Briefing Study (iii) a Charette {undertaken in the place of studies i, ii and iv} (iv) a Concept Design Study (v) a Detail Design Study and (vi) an Operations Study, conducted during the on-site production stage.

Within this context, the primary role of the value manager becomes one of deciding on, structuring and delivering a study style tailored to a particular value problem within a project, project programme, service or organisational grouping. The term ‘problem’ is used in a neutral sense to mean a challenge, enigma or conundrum. It has a closer association with the idea of a mathematical puzzle and does not imply a value-laden term such as ‘difficulty’. Structuring a study requires consideration of the value problem strategically and tactically, taking account of the different phases within the study, and the extent to which value systems (different stakeholder perspectives) conflict or coalesce. In this context, the skills of the value manager comprise the ability to understand a value problem, structure a process (occurring usually during the Orientation and Diagnosis Phase), bringing representatives from competing value systems together and introduce improvements subsequently (through the Workshop Phase), and, ensure that these are implemented (during the Implementation Phase). Value management then becomes a change-oriented process and needs to be treated, designed and delivered as such.

An Enhanced VM Process

The analysis by Male et al (1999), Cheah and Ting (2002) and Fong (2004) identify a clear need for value management to have an enhanced profile professionally and to be differentiated from other management methodologies. The focus on function and the derivation of alternative solutions to meet defined functions at the optimum cost, as delineated by a value system of different stakeholders, is at the heart of VM as an innovation and improvement process.

Value management focuses on value system evolution and resolution by bringing the right team together at the right time. Through its structured, challenging, analytical and mediated process it permits value systems to coalesce to the benefit of the commissioning organisation, regardless of whether the service is offered internally within an organisation or is commissioned externally. When used proactively it can align value systems from the outset and ensure that a project, for example, progresses effectively and efficiently. Decisions are taken in light of the fact that it costs money to retrace footsteps. When value management is used reactively it usually involves re-aligning value systems that have become distorted for whatever reason; or, attempts to re-assemble a “value thread”, the tenuous linkages that often exist between successive stages in a project or process, if it has become strained or broken (Bell 1994). In many instances, once the value thread is broken, for example, where a project team becomes dysfunctional, it can become an uphill struggle to re-assemble it. The study may prove this is not achievable.

It is argued here that the key to the enhanced status of value management lies in the ability of the value manager to formulate, design, and, implement an appropriate study style. The authors have now identified four generic study styles that can also be utilised, for example, in conjunction with those identified earlier at project intervention points. Generic study styles comprise:

- Study Style 1 (SS1); where an appointed value manager works with an existing multi-disciplinary team of record, with the objective of challenging and introducing change into the project / organisation’s value system.
- Study Style 2 (SS2); where an appointed value manager brings together an independent tailored team of specialists for a value system audit study.

- Study Style 3 (SS3); where an appointed value manager works with any existing multi-disciplinary team using the structured VM process to assist the team in integrating and prioritising information, understand value problems, structure thinking and develop a way forward such that value systems are and remain in alignment.
- Study Style 4 (SS4); where an appointed value manager brings together a tailored independent value team of specialist for a value system audit and subsequent reconfiguration.

The analogy of crafting wood will be used to assist in clarifying the study styles, for example, 'going with the grain' means that the VM process aligns consensually a range of value systems present in the problem situation that are already not far apart. In this situation, the value manager is acting much more in the role of process manager. 'Going against the grain' means that the VM process is likely to disturb, fracture, or even break value system alignment, either deliberately as an intervention strategy, or, as a consequence of the process itself because that needs to happen as the only way forward. The value manager is much more in the role of value system challenger, confronter, and, intervener.

SS1 is the normal UK approach and can be adopted for projects, programmes of projects, business process or organisational change studies. Until recently, this typified the majority of the studies conducted by the authors. It also typified study types identified in the international benchmarking study in Australia and in the private sector in North America. The strengths of this study style are that the learning curve is reduced for everyone and implementation of ideas and options is enhanced, since those that have generated solutions are more likely to take them forward. It is relatively inexpensive. It places considerable reliance on the value manager being able to challenge the current perceptions, attitudes, assumptions and ideas of those in the existing team of record. This requirement becomes more acute on complex projects, especially where there is a high degree of technological innovation, or, politics. As the level of complexity, innovation or politics, or all of these, increases within the problem situation at hand, a greater onus is placed on the value manager to achieve the appropriate balance of time between the Orientation and Diagnosis, Workshop and Implementation Phases. SS1 has the potential to 'go with the grain' or 'against the grain' depending on circumstances, the intervention strategy adopted, or, the evolution of the study, especially during the Workshop Phase.

SS2 is the classic US study style for public sector activity where essentially an audit team intervenes on a project, a programme of projects, or in an organisational process. The value manager selects the appropriate multi-disciplinary team and they work independently of the existing team of record. The authors have only conducted two such exercises in the UK, both were audits conducted for clients concerned about the progress and value-for-money of their projects. It is expensive, time consuming, and has the further disadvantage of increased learning curves for the independent team. However, its major strength comes from bringing together a fresh team to look at a problem, and, provided the value manager selects the team appropriately, it can handle any level of complexity within a problem situation. It has the additional advantage that it can cut through politics. There is greater emphasis for the value manager on the Orientation and Diagnosis Phase, less on the Workshop Phase since they are much more in the role of process manager than challenger, and, more on the Implementation Phase. SS2 has the greatest potential to 'go against the grain' when recommendations by the independent team are presented the existing value system representatives. .

SS3 is an extension of SS1, with challenging of assumptions less in evidence. The process, tools and techniques of value management are used to assist a team think through a problem and find a way forward. An example would include assisting a supply chain bid team develop a tender submission. To work very effectively, it can require internal organisational knowledge of the process of value management, although this is not a pre-requisite, and it is fast, efficient, increases cross-team learning, information sharing, and focuses on solving the 'real' problem at hand. The authors have increasingly worked for contractors using this style

with their bids teams across a range of procurement routes and supply chain situations. It has also been used in designing and implementing partnering structures on projects. The emphasis for the value manager in SS3 will be more on the Orientation and Diagnosis and Workshop Phases and less on the Implementation Phase since the team of record should usually be highly motivated towards implementation. SS3 clearly has the potential to 'go with the grain', with limited if any potential to 'go against the grain' in a bid situation, and the authors have rarely encountered the latter in this type of situation. The potential to either 'go with the grain' or 'against the grain' in developing partnering structures depends on the initial starting point of stakeholders. The authors have experienced both, sometimes within the same partnering workshop.

SS4 is a hybrid between study styles 1, 2 and 3. Unlike SS1 to 3, the value management team is acting in an advisory role. The process is underpinned by the VM methodology, are not bound by it in a rigid way but use its flexibility. The team will work alongside client personnel to develop and implement solutions and be held accountable professionally for that involvement and the advice given. With SS1 the Orientation and Diagnosis Phase could be extensive, and workshops used in a variety of ways, implementation is seen as an ongoing process throughout. This approach was utilised recently by the authors in developing a national asset strategy for the UK's Environment Agency, where 80 senior personnel were working with a value consultancy team of eight specialists in different configurations over a six-month period. The authors have also used it at the concept stage of a project to develop the strategic and design briefs simultaneously, including an outline output specification, the budget, and a procurement strategy. The process adopted uses the VM process for gathering, sharing and exploring information, challenging assumption usually but not always in a workshop, developing options and advising. The emphasis for the value manager with SS4 will be on designing a reinforcing relationship between the distinct phases of the VM process, with Orientation and Diagnosis, Workshop and Implementation Phases at times running concurrently as the change process unfolds. SS4 will be designed specifically at times to 'go with the grain' and at times 'against the grain'; with a clear expectation that the value systems going into the process will be different from when they come out of the process.

DISCUSSION

Historically, functional analysis can be argued to be the only distinguishing characteristic of value management from other management philosophies and approaches, although as indicated above, that is increasingly open to interpretation. Many of the tools and techniques used by value managers are not unique to the methodology, holding workshops is in no way unique, neither is facilitation of teams. There are many management methodologies that have a structured process to them. During earlier work for the Royal Institution of Chartered Surveyors, Kelly and Male began to seriously question whether VM was another management fad and would, in line with many other management fads, eventually disappear into oblivion. After nearly 60 years it has proved resilient. The authors undertook a benchmarking study between 1996 and 1998 to understand, from an international perspective, the tools, techniques and styles of VM, and, address their own concerns. From this data and from ongoing action research into the implementation of value management, the authors have concluded that VM is a service with three primary core elements, namely, a value system or systems that interact and need to be made explicit in order for value-for-money decisions to be made appropriately, an associated team-based process, and, using function analysis to promote a greater and deeper understanding across value system(s) of why something is or is not required. Supporting the foregoing, VM encompasses an underlying process with three generic phases; the Orientation and Diagnostic Phase, the Workshop Phase, and the Implementation Phase. It is this total package that makes it distinctive. The result is a series of generic study styles.

The role of the value manager comes to the fore in designing and implementing study styles to suite a whole range of different situations. Figure 2 below sets out generic study styles along a

continuum reflecting their focus, and the extent to which they require the exercise of independent professional judgement in designing a study style, consequently involving greater value system intervention where the value manager can be held accountable for the outcomes, and hence professionally liable as the level of independent advice increases. The continuum also demonstrates a shift from recommendations made by the existing team of record under the assistance of the value manager to one where the value manager, as primary point of contractual contact, is liable for the advice provided by a tailored specialist team.

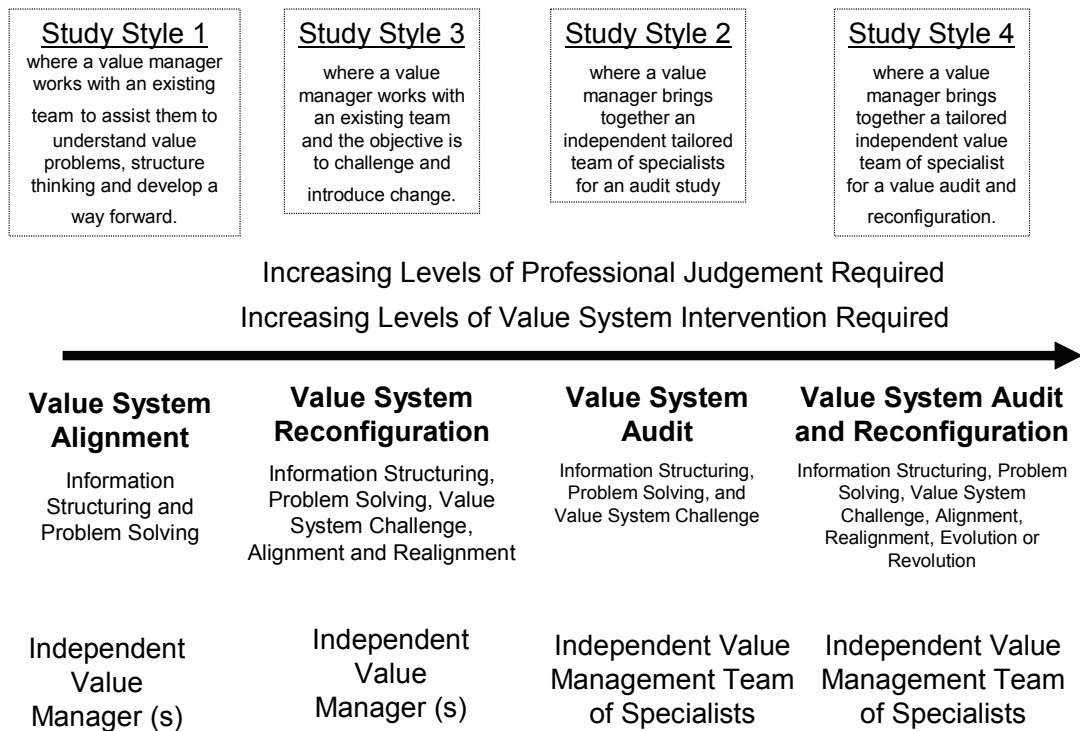


Figure 2: A Study Style Continuum

In drawing these strands together in Figure 2, with those in Figure 3 below a revised value management process has been presented. Figure 3 includes important activities that take place during each of the phases, the tools and techniques that can be used at each stage, and the critical success factors.

CONCLUSIONS

It is the authors' view that if VM is to survive into the future and avoid the tick box syndrome, be seen as purely a workshop activity, or a service where a value manager is only assisting an existing team of record develop their own recommendations, the role of the value manager must be enhanced considerably. Value management should now be seen as embracing a more comprehensive package of skills, and a more holistic and inclusive service to deliver best value. The value manager's role of the future is seen as designing, tailoring and structuring a study strategically and tactically to take account of the core elements identified above, the phases within a study, and fine-tuning the approach to address an overt or covert value challenge by bringing value systems together and introduce improvements. Value systems and cultures are reconciled and coalesced during a predetermined, pre-designed Workshop Phase and as a consequence value management becomes a change-oriented process where the value manager also requires skills in change management. The authors see the future of value management increasingly as aligned to study style 4 above in order to become a fully professional service; where VM becomes advice-laden and for which the value manager must accept liability for his/her professional advice. Offering a professional service and taking on board a wider liability for that service raises a tranche of issues for certification and practice Standards, such as the British Standard BS EN 12973:2000, the SAVE International Standard and the ANZ Standard, and the role of professional associations.

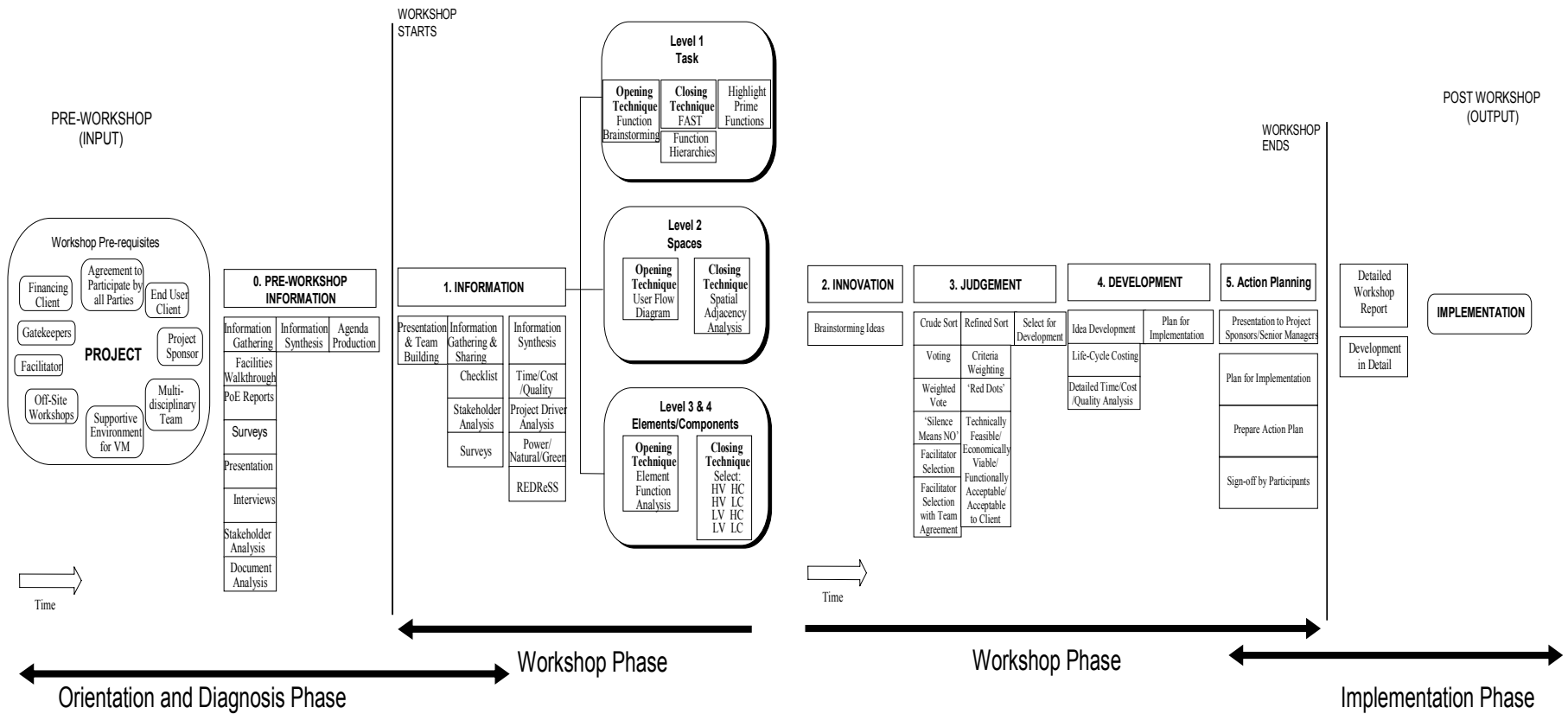


Figure 3: An Enhanced Value Management Process; Source: Male et al (1999b)

REFERENCES

- Adams, E (1993) *Value Management: Cost Reduction Strategies for the 1990s*. Melbourne: Longman
- AS/NZS 4183 (1994) *Value Management*. Joint Technical Committee OB6. Standards Australia and Standards New Zealand
- Bell, K (1994) *The Strategic Management of Projects to Enhance Value for Money for BAA plc*. Unpublished PhD Thesis. Department of Building Engineering and Surveying, Heriot Watt University.
- Bryman, A (1995) *Research Methods and Organisation Studies*. Reprinted 2002. London: Unwin Hyman Ltd
- BS EN 12973 (2000). *Value Management*. British Standards Institution.
- Ceah, C Y J & Ting, S K (2005) Appraisal of Value Engineering in Construction in South East Asia, *International Journal of Project Management*, **23**, 151-158.
- Checkland, P (1981) *Systems Thinking, Systems Practice*. Chichester: John Wiley & Sons
- Dell'Isola, A (1988) *Value Engineering in the Construction Industry*. 3rd ed. Washington, DC: Smith, Hinchman & Grylls.
- Fallon, C (1980) *Value Analysis*. 2nd Ed. Miles Value Foundation.
- Fong, P S-W (2004) A Critical Appraisal of Recent Advances and Future Directions in Value Management. *European Journal of Engineering Education*. **29** (3), September, 377-388
- Glaser, B and Strauss, A (1967) *The Discovery of Grounded Theory: Strategies for Qualitative Research*. Chicago: Aldine.
- Goulding, C (2002) *Grounded Theory: A Practical Guide for Management, Business and Market Researchers*. London: Sage Publications.
- Green, S D (1994) Beyond Value Engineering: SMART Value Management For Building Projects. *International Journal of Project Management* , **12**(1), 49-56.
- Green, S D (1992) *A SMART Methodology for Value Management*, Occasional Paper No. 53, Ascot: Chartered Institute of Building.
- Green, S D (1996a) *SMART Value Management: A Group Decision Support Methodology for Building Design*, PhD Thesis, Department of Construction Management and Engineering, University of Reading.
- Green, S D (1999) A Participative Research Strategy For Propagating Soft Methodologies In Value Management Practice. *Construct Management & Economics*, **17** (3), 329 - 40
- Kaufman, J J (1990) *Value Engineering for the Practitioner*. 3rd Ed. Raleigh:North Carolina State Press.
- Kelly, J and Male, S (1993) *Value Management in Design and Construction*. London: E&FN Spon.
- Kelly J Male S and Graham D (2004) *Value Management of Construction Projects*. Oxford: Blackwell Science.
- Lie, A M M and Leung, M-y (2002) Developing a Soft Value Management Model. *International Journal of Project Management*, **20**, 341-349

- Male S, Kelly J, Fernie S, Gronqvist M, and Bowles G (1998a) *The Value Management Benchmark: A Good Practice Framework for Clients and Practitioners*. Published Report for EPSRC IMI Contract. London: Thomas Telford.
- Male S, Kelly J, Fernie S, Gronqvist M, and Bowles G (1998b)., *The Value Management Benchmark: Research Results of an International Benchmarking Study*. Published Report for EPSRC IMI Contract. Thomas Telford
- Male S, Kelly J Gronqvist M, Bowles G and Fernie S (1999) The Professional Standing of Value Management: A Global Study of Legislation, Standards, Certification, and Institutions. *Proc SAVE International Annual Conference*, June, San Antonio Texas, Vol XXXIV, 158-166
- Miles, L D (1972) *Techniques of Value Analysis and Engineering*. 2nd Ed. New York: McGraw Hill
- Miles, L D (1989) *Techniques of Value Analysis and Engineerin*. . 3rd Ed. Lawrence D Miles Value Foundation.
- Mudge, A E (1990). *Value Engineering: A Systematic Approach*. Pittsburgh, PA: J. Pohl Associates
- Norton, B R and McElligot, W C (1995) *Value Management in Construction: A Practical Guide*. Basingstoke:Macmillan
- O'Brien, J (1976) *Value Management in Design and Construction*. New York: McGraw Hill.
- Robson, C (2002) *Real World Research*. 2nd Ed. Oxford:Blackwell Publishing.
- Standards Australia (2004) *Value Management*. DR 04443. Committee OB-006.
- SAVE (1998) *Value Methodology Standard*. Revised October 1998. SAVE International.
- Parker, D E (1985). *Value Engineering Theory*. New York:McGraw Hill
- Shen, Q and Chung,J K H (2002) A Group Decision Support System for Value Management Studies in the Construction Industry. *International Journal of Project Management*, **20**, 247-252
- Schon, D A (1991) *The Reflective Practitioner: How Professionals Think In Action*. Reprinted 1999. Aldershot: Ashgate Publishing Ltd
- Thiry, M (1997) *Value Management Practice*. Sylva, NC: Project Management Institute.
- Thiry, M (2001) Sense Making in Value Management Practice *International Journal of Project Management*, **19**, 71-77
- Thiry, M (2002) Combining Value and Project Management into an Effective Programme Management Model. *International Journal of Project Management*, **20** 221–227
- Zimmerman, L W & Hart, G D (1982) *Value Engineering: A Practical Approach for Owners, Designers and Contractors*. New York:Van Nostrand Reinhold