

# Value World

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## CONCEPTS OF VALUE IN VALUE MANAGEMENT: The relationship between Function and Value

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### INTRODUCTION

The term 'Value Management' suggests 'value' is being 'managed'. However, when we discuss what the word 'value' means it often takes on many meanings. How can such ambiguity aid good value management? This paper explores the systemic relationship between value, the solutions that yield such value and the functions such solutions perform. Such understanding is necessary to aid the delivery of value improving results.

### THE RELATIONSHIP BETWEEN FUNCTION AND VALUE

Functions are the 'essentiality' of the way things work and the effects of functioning are the indicators we use to assess the value of working systems. Value increases when functions are optimally aligned with processes, outcomes and purposes (Berawi, 2006). For example, an aeroplane offers more value to me for crossing the Atlantic Ocean to Houston, than a rowing boat does. The reason such a choice is obvious is a product of the relationship between functions and value.

### THE PARADOX OF VALUE

In 1776 Adam Smith wrote about the paradox of value in "An Inquiry into the Nature and Causes of the Wealth of Nations" (Smith & Cannan, 1977):

*Nothing is more useful than water; but it will purchase scarce anything; scarce anything can be had in exchange for it. A diamond, on the contrary, has scarce any value in use; but a very great quantity of other goods may frequently be had in exchange for it.*

Smith was postulating two key types of value; 'value in use' and 'value in exchange'; a theme Professor Dan Seni and Jerry Kaufman will explore further in this trilogy. Value-in-use is the functional value something has, such as the value a shovel has when wanting to dig a hole.

Value-in-exchange is the worth we attribute to a thing in order to take ownership of it. Crucial to the consideration of value-in-exchange is the concept of property which can be owned.

The paradox of value, so central to the study of economics with its supply and demand curves, leads us to 'believe' diamonds command greater value than water. Imagine you are offered a choice. You can choose between either a diamond or a enough water to drink for a year. Which would you chose? If we ask this question here in Houston today then, assuming rational choice, most of you would choose a diamond because you know you can easily get water. If we transported you to the middle of the Sahara dessert and after a few dehydrating days offered you the same choice most of you would favour the life saving water. That is, value changes as the context changes, it's relative to a complex amalgamation of choices and possible consequences. This is why it is so difficult to define as it constantly changes depending on circumstances.

Value is always about some form of benefit to be enjoyed either in the short term or the longer term; it is a part of perceived benefits. Therefore, we can't talk of value without also defining the context in which its consideration is taking place, nor how that context is itself evolving. For VM that means, we can't talk about improving a product without understanding the systemic context in which such value-improvement will be realised. This paper will explore this relationship.

## **VALUE MANAGEMENT AND PROGRESS**

The fortunes of many industries are tied to technological advancement and VM has played a key role in helping many organisations grow and prosper. This is because VM uses a notion of functionality to stimulate the search for alternative methods of performing such functionality (Kaufman & Woodhead, 2006). VM with Function Analysis helps multidisciplinary teams, with different views of systems, to innovate its technologies and thus plays a part in the pursuit of progress. Just as the transatlantic steam boats gave way to aeroplanes and the car superseded the horse and cart, technological advancement is about finding better ways to perform functionality. That is, value is inextricably linked to 'systemic' notions of improvement or betterment, even if the reality later shows such 'notions' to be ill-founded. For companies, survival in dynamic markets ensures progress neither stalls nor happens in a vacuum; someone will always try to create a better solution which leads to the 'creative destruction' Schumpeter talked of (Schumpeter, 1942). Technology shapes and is shaped by society and the role of VM is implicitly linked to such a realisation. As technology is the way we perform essential functions then the potential for VM in different and more strategically broader forms is enormous.

The way we perform key functions (e.g. transmit information) shapes society and its values; progress is always an improvement on what went before because of value based choices. We recognise 'progress' because a new solution has more 'perceived' value than the 'old way' it supersedes. By 'technology' we simply mean the solution used to get things done (Woodhead & McCuish, 2002).

## **SHORT TERM AND LONG TERM VALUE**

Today we are facing up to the realisation that short term gains can bring long term loss of value,

and our conceptualisation of decision making processes is being grounded in a more systemic understanding (e.g. sustainability). As such, any notion of progress must be aligned with long term goals or run the risk of adding to problems future generations have to deal with. The challenge is to develop a better systemic understanding of how variables interact and in such a way multidisciplinary teams can collaborate to build a more reliable representation of possible consequences. Yet there is little evidence such enquiries happen within the shrink wrapped view of VM or VE and their Job Plans.

Some books on value engineering talk of types of value such as use-value, cost-value, esteem-value and exchange-value (e.g. Crum, 1971). All these perspectives hold concepts of value as if they can exist independently from everything around us, as if value is itself detached from ‘everything’. They lack a link to systemic thinking and as such ignore the role ‘context’ plays in defining ‘value’ (excepting Fallon, 1980, who alludes to a synthetic understanding of value and Kaufman & Woodhead, 2006 who link systems and function models).

When explaining systems thinking, Senge (1994) talks of a heating problem in a room and uses system dynamics logic to explain how people turn a thermostat up too much when they are cold and then turn it down too much when they are hot. As a result, the temperature of the room never ‘comfortably’ stabilises as occupants react to the short term without considering the effects of both ‘delay’ and ‘feedback’. Kaufman and Woodhead (2006) also talk of a thermostat but from a different perspective. They look at a ‘part’ in a system and ask what is its function, its essential role, and later reveal it is nothing other than a switch that is used to control electrical current. This allows us to see a thermostat used in two different types of explanation. Senge sets it within a system and Kaufman & Woodhead enquire into its functionality. That is, as the thermostat ‘functions’ the ‘system’s dynamics’ change. So there is a relationship between a function and its effect in a system and our judgement of whether such effects provide the best benefits links ‘value’ to such an enquiry.

## VALUE, SYSTEMS AND FUNCTIONALITY

Value is context dependent and the context is a collection of interacting systems. The way we perform functions leads to changes in such systems. The effects of the system are appraised by humans to judge whether they are beneficial and whether they offer the best value. So, we have a clear line of sight between functions, systems and value (see figure 1).

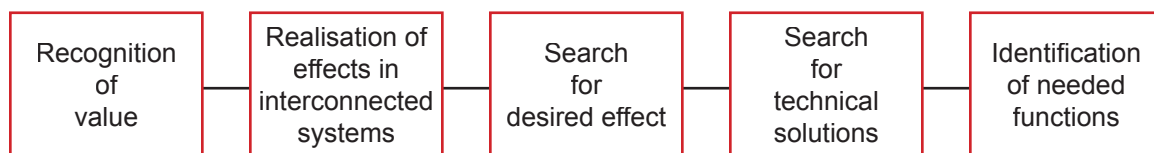


Figure 1. A clear line of sight from function to value.

Using the principles of FAST modelling, which are central to VM, we can develop a functional model of the innovation process which accepts any particular benefit will have a life span. The upper half shows a classical approach to function modelling but the lower half brings in the pros-

pect of change as what is viewed as cutting edge one day becomes common place the next.

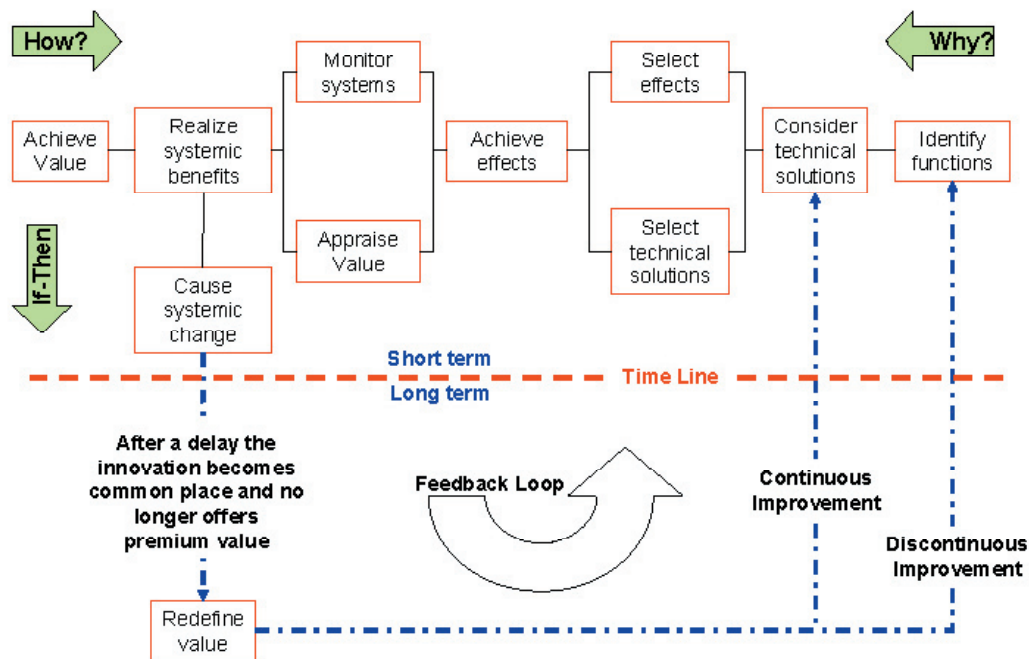


Figure 2. A functional theory of innovation processes.

The lower half is thus a product of learning from market feedback and reflects the fact functions are suffused through many interconnecting systems. If this FAST model is deemed adequate then the question becomes, “How does Value Management perform and control these functions today?” and “is the way we view the Job Plan adequate?.”

## MAKING SYSTEM THINKING EXPLICIT IN VM

The implication of this is Value Management must begin by understanding systemic value. What is more, this understanding needs to be formed in a group effort so as to foster shared meaning and to tease out different interpretations of reality from different perspectives.

Figure 3 (next page) shows a system dynamics model developed by interviewing and checking understanding. It explains how the landing gear for an aircraft is implicated in a complex net of causal consequences The next step is to identify which variables managers can change and which are out of their sphere of influence.

These variables become the feedstock for traditional approaches in Value Management such as Paired Comparison and Range of Goodness (See Kaufman & Woodhead, 2006, Woodhead & McCuish, 2002). The relevance of this is that the output of a Value Management study must predict and realise change in the system model from which notions of value are derived. That is, the suggestion of an idea for improvement must be explained in terms of the effect it will have at

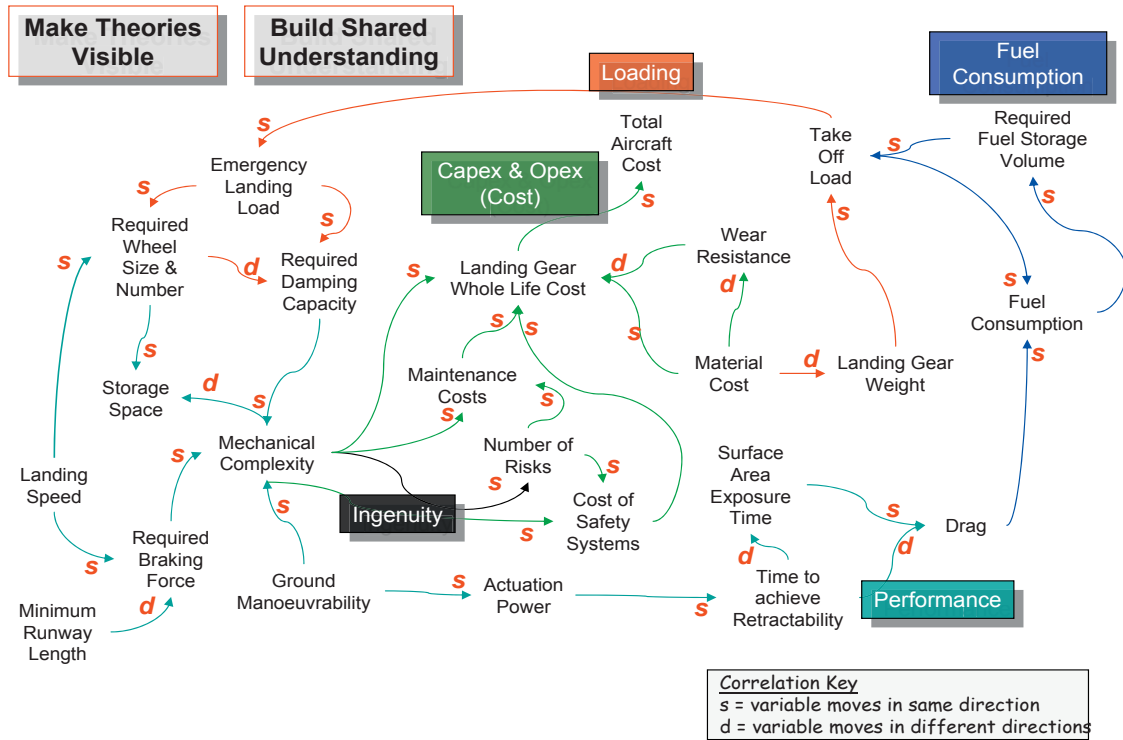


Figure 3. System dynamics model for landing gear.

the systems level. This connection between function, idea, and effect at a systems level, allows a clear line of sight between the efforts of a VM team and the results the organisation needs. It's about alignment between 'doing things right' and 'doing the right things'. Without such alignment the suggestion of an improvement idea cannot really be judged in terms of its role in creating value. What may seem like a good idea might prove otherwise or even be impossible to implement at the systems level of thinking.

## CONCLUSION

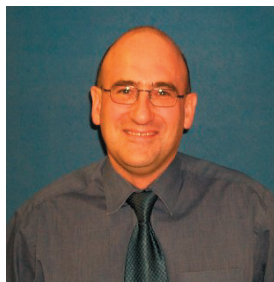
This paper has made visible a clear line of sight between value, systems, technical solutions and functions. It has used these arguments to create a FAST model, which should be a familiar method to this conference, to show what functions VM needs to perform if it is to play a more proactive role in the pursuit of progress. We offer this model to stimulate discussion and question whether the way our community views value management is as adequate as it could be. That is, do we really have a theory that aligns value, technology and function? We argue that without a clear link to the effects of improvement ideas at the system level there is no way to evaluate the 'worth' of an idea.

It finished by showing how such theories have been used in practice and offers them as proof of the merits of this paper's central argument. That argument is, "systems are the effect caused by solutions selected to perform functions."

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## AUTHOR INFORMATION



Dr. Woodhead is an internationally acclaimed expert in functionality based innovation. He has used this approach to stimulate innovation in R&D contexts and for several major organisations. Whilst an academic at Oxford Brookes University, he taught new product development, innovation management, technology management, value management, decision analysis, systems thinking. He has numerous publications, three books, international journal papers, and has been an invited keynote speaker to international conferences. Recently he left academe to get closer to industrial innovation and is now a senior consultant with EDS, the large IT services management company.

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