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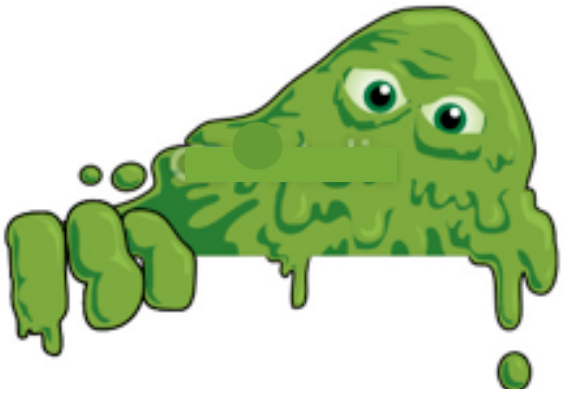
AMQ International's

STRATEGIC ASSET MANAGEMENT



September 16, 2013

Blobs, Dots and Lines

Asset Management doesn't have to boring to be serious.

In fact, if you have a serious point to make, you do yourself a disservice to make it boring. Many of the most important, controversial, or sensitive points are often best made in cartoons! I wish I was a cartoonist, but I am not. So, instead, under the "Blob" heading, I bring to your notice the work of two very talented thinkers in Paul Culmsee and Kailash Awati who look at the development of memes, and collections of related memes known as memeplexes. Whilst they have project management in mind, rather than asset management, the similarities will be immediately apparent. See "The Blob is coming to get you" on pages 3-5

Then under the "Dots" heading I look at the danger of using a DOT (the mid-point of a distribution) when a RANGE would be more appropriate. See "NOT A DOT" on pages 6-7

Whilst under the 'Lines" heading I look at something not often enough discussed and that is reasons for, and ways to, flatten the peakiness of your renewal profiles on pages 8-10. Sure, you can leave them as they are, take the high ground, state that your profiles are the last thing in excellence - and therefore that it is others who need to make adjustments. However, since these others are your friends in Finance who have other problems of their own, this can be an unwise position to take for your own sake - and a wasteful one for your organisation's sake.

Finally, in the Editorial, (page 2) consider this: Communities don't want more infrastructure.

As always, please consider - and enjoy!
Asset Management may not be easy - but it should be fun.
Penny

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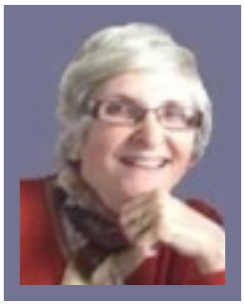


EDITORIAL: Infrastructure v Service

Australia is now recovering from the throes of a national election campaign. A few weeks ago, everywhere you looked, politicians were falling over each other to promise more infrastructure or to argue (e.g. central coast of NSW) that the current government had under-provided infrastructure. The latter I consider particularly dangerous since almost certainly those councils, like all councils, are having trouble sustaining existing assets let alone a larger portfolio.

No community really wants more infrastructure!

People don't want infrastructure, they want service, that is, not hospitals as such but rather better health care, not schools as buildings but better education for their children, not more roads but a quicker, easier commute with less congestion.

At election times, infrastructure and service are presented as if they were the same thing - but they are not.

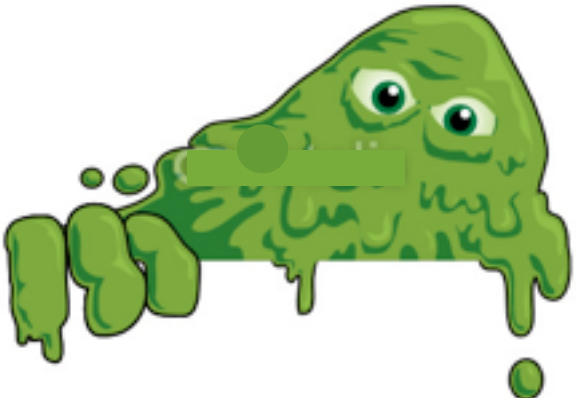
It is easily possible to have more infrastructure yet less service (especially if staff and maintenance have to be cut to fund the capital costs), and equally more service is possible without more infrastructure, if we utilise existing assets better or change the way the service is provided.

We need to clearly separate infrastructure and service in our own minds if we are to convince others to do the same. So whoever you speak to - colleagues, councillors or the community, be careful how you speak.

They want more service

The words you use define the problem. If you say 'the problem is that we don't have enough infrastructure' the answer is obvious: more infrastructure! But if you say 'the problem is that we want to improve our service levels', a whole new world of possibilities opens up.

How can you change the way you speak to focus on service?



The Blob is coming to get you!

"The Blob" is a 1958 movie where an Alien Lifeform, a blob of goo, consumes everything in its path as it grows and grows. Paul Culmsee and Kailash Awati in their new book "The Heretic's Guide to Best Practice" use the Blob as an analogy for how the development of memes and memeplexes (a collection of related memes) can grow to so dominate a field that further advance - via new ideas - is seriously limited.

The memeplex, like 'The Blob' simply absorbs the new ideas within itself, distorting if necessary, in an effort to preserve its own identity. Many of you will have read or heard about memes (originally proposed by Richard Dawkins in "The Selfish Gene'). Like the selfish gene, memes are ideas that preserve and replicate themselves.

We may not have thought of them as memes, but ideas like 'commercialisation' and 'privatisation' are ideas that spread rapidly in the 1970s throughout the UK, the USA and Australia. The idea that it was 'good' to act in a 'businesslike' manner and that private enterprise was always better able to supply government services than the public sector are successful memes. To challenge these ideas is today regarded as heretical. Yet, at one stage, the idea of privatisation must, itself, have been seen as heretical. So how does an idea become a meme?

Is Asset Management now a meme?
If so, is this 'a good thing'?
What dangers exist for its future development?

This is how Paul Culmsee and Kailash Awati tell the story

In the beginning ...

> When one person has a radical idea they are usually branded a heretic, like that one person in every office whose stock answer to any questions is "Just buy a Mac." But when that mad heretic manages to convince someone else that their idea is good, something magical happens: the heretic becomes the visionary and the ideas behind the heresy become the seed of what will eventually turn into a memeplex.

Adolescence...

All of us adults remember the adolescent stage of our lives when we dealt with hair in funny places and making the transition into adulthood. A set of related heretical ideas have to go through a similar process of finding an identity and becoming a full-fledged memeplex.

Organisations are continually subjected to influences from the economic and political environment in which they exist. ... One of many responses to such influences is to create new organisational roles to deal with the changes. These roles, with the cool titles and position descriptions that accompany them, can be thought of starting the 'transition to adulthood' of a memeplex.

Like all new and fresh sounding postion titles, there is a period of identity crisis where practitioners try to find their niche in an organisational machine that doesn't quite know where to fit them in. Additionally, within this new discipline there are various practitioners doing things in different ways depending on their interpretation of their roles.

The effect the new roles have on the organisaiton and the wider 'skills marketplace' may be seen as radical or revolutionary by other well-established disciplines. The latter may at first reject the new discipline because it challenges the 'rightness' of theirs. ...

An organisation is, quite literally, an organism and organisms respond to changes in ways that tend to maintain the status quo. However, given enough time and a certain critical mass of practitioners, the system begins to accept the changes ... and the memeplex starts to take on an identity of its own. Unfortunaely, the new memeplex is still to be established; it needs to do more work for wider acceptance.

The step towards wider acceptance is when professional bodies start to appear. These often begin as informal organisations but are the young memeplex's first steps towards professional respectability. Invariably, after a period, professional bodies begin to develop 'bodies of knowledge'. From there it is a short step to certification that demonstrates a 'deep and meaningful' understanding of this codified knowledge. This signals that the memeplex is now approaching adulthood. A few practitioners - the early adopters - now want to be inducted into the 'club of the certified' and be considered one of the clique.

More organisations start to notice the new 'cool kids' club and decide that their employees should be cool kids too. Therefore, they begin to ask for certification and professional association membership as a prerequisite for employment. Prospective employees then see this requirement and realise that they also need to be in the club if they want to get a job.

At or around the same time as organisations start to legitimise the new memeplex, educational institutions get in or the act and endorse it further by integrating it into their curriculums. After all, they want to be seen as cool, too.

Maturity ...

The memeplex has now come of age; it is mature, self-perpetuating and has some cool new job titles to show for it. Disciples of the associated body of knowledge have now been given the 'absolute truth' and proceed boldly into the world to preach the good word. The result is that the memes are propagated rapidly. The memes are now part of conventional wisdom (the status quo) and will 'do what they can' to protect and propagate themselves.

... the chances of a radically new idea making it through to the mainstream are small because new ideas that are even slightly heretical are rejected by the memeplex. This is a consequence of the memeplex 'immune system' that we mentioned earlier. The only way that a new idea can survive is:

By being engulfed and assimilated by the memeplex (the blob of goo visual is particularly apt here); or

By achieving a 'critical mass of acceptance' as mentioned in the previous section. The telltale sign of this is the appearance of a new job description appearing in organisations.

In general, any existing memeplex challenged by a new idea will first attempt to assimilate it and will succumb only if it is unable to deal with the changes wrought by the new competitor.

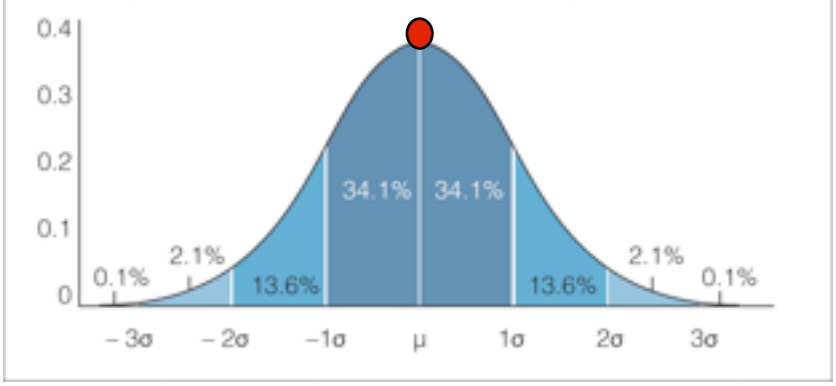
It is possible that you have not looked at project management, or other disciplines, through a memetic lens up until now. If so, this is an illustration of the power of established memes and the difficulties faced by new ideas in challenging the status quo. ...

And finally, a hidden danger

One final point before we close this chapter. It should be clear from the foregoing discussion that well established memes can cause people and organisations to take a blinkered view of the challenges they face. For example, a bureaucratic approach to managing a product development project, wherein 'Best practice' processes and procedures are enforced without any regard to their utility, can stifle creativity and innovation - the very qualities one needs when creating novel products.

> Paul Culmsee and Kailash Awati 'The Heretic's Guide to Best Practices: the *Reality* of Managing Complex Problems in Organisations' iUniverse Inc. Bloomington. 2013.
>
> Available through Amazon.com for only $20.70. (Or choose the Kindle version for just $6.15) I highly recommend it. It is informative, witty, fun to read - and at the end you will have learnt much that is valuable in your role as an asset manager.

NOT A DOT



If you have been a reader of SAM for very long you will know that there are issues with using the mid-point of the distribution of economic lives as a shorthand for 'the' life of the asset. Although this is a very useful way of expressing economic life it is not very informative and it lends itself to serious misinterpretation by decision makers.

If we assume a normal distribution (and we may not want to) then approximately half of the assets will fail BEFORE the economic life, and approximately half AFTER that point.

The assets that collapse exactly on the day are rare indeed! So you can imagine my delight to see that some organisations are starting to express their asset lives as a RANGE in the notes to their accounts. What are the advantages of doing this?

THE ADVANTAGES OF EXPRESSING LIFE AS A RANGE

1. STOPS MISUSE

2. PROVIDES MORE INFORMATION

3. ACTS AS A CHECK ON ASSET CATEGORIES.

STOPS MISUSE

It is common to hear those who do not understand the statistics underlying normal distributions to say such things as "This asset has exceeded its economic life, it must be replaced" Or "20% of our assets have exceeded their economic life - this means that the organisation is not keeping up with its asset renewal". If we replace assets when they are no longer functionally fit, then those that remain - no matter their age! - are still functionally fit. They are the 'oldies but goodies' or the right hand side of the distribution.

Using the DOT to represent the renewal time *of an individual asset* is incorrect and lends itself to gross wastage through too early renewal.

The DOT (or the mid-point of the distribution) is only safely used in situations where we are comfortable that the 'overs' compensate for the 'unders' - in other words when we are doing

forward financial planning for large groups of similar assets - and not when we are looking at intervention for a particular asset.

If you have been on the end of a ministerial or council request to "predict the end of life of the boiler in that hospital in my district" then you will know what I mean. Expressing asset life as a dot is subject to easy misinterpretation.

Equally if you are asked to predict the life of a group of assets, but that group is small, then the confidence you can have in your answer is slight. Only when you can safely apply the 'law of large numbers' does it make sense to confidently use the mid-point of the distribution. We will look further at confidence in a moment.

PROVIDES MORE INFORMATION

An asset range of 25 - 75 years, again assuming a normal distribution has a mid-point of 50 years. But then so does an asset range of 15 - 85 years, or 40 - 60 years. Which range would give you the most confidence that the asset would fail close to the 50 year mark?

To answer the confidence question (which is essential for any study of risk and reliability) you need to have an idea of the range.

Around about now you are probably saying to yourself "Hey, I have enough trouble coming up with an estimate of the mid-point, there is no way that I could estimate a range".

No? If that is truly the case then your mid-point estimate is not an estimate, it is a guess! However, you probably know more than you think you do (or would be prepared to stake your life on!). Suppose you ask yourself "What is the earliest that I would expect any asset in this group to fail if the average life really is 50 years? And what would be the latest I would expect an asset in this group to fail if, again, the life really is 50 years?" How confident am I that this is the range? 66% confident? 95% confident? Few of us, I guess, would be 95% confident of our estimate but for some types of plant that we are very familiar with, this may be possible.

This is not information that the accountant can provide, it requires the input of those familiar with the operations and maintenance of the asset.

ACTS AS A CHECK ON ASSET CATEGORIES

Now ask yourself what would cause an asset to fail early and what would be the characteristics of those that go well past the average life? If you realise that there are certain physical characteristics of the asset that would cause it to depart significantly from the average - then consider developing a separate asset category for it. For example, sealed roads and unsealed roads have very different failure characteristics and would not be put in the one category of 'roads' but the type of seal used could make a large difference to the life of the seal and if that were the case, a separate category for those assets could provide a better predictor.

WHAT CONFIDENCE DO YOU NEED?

It depends! How are you going to use the information? How critical is the answer to your organisation?

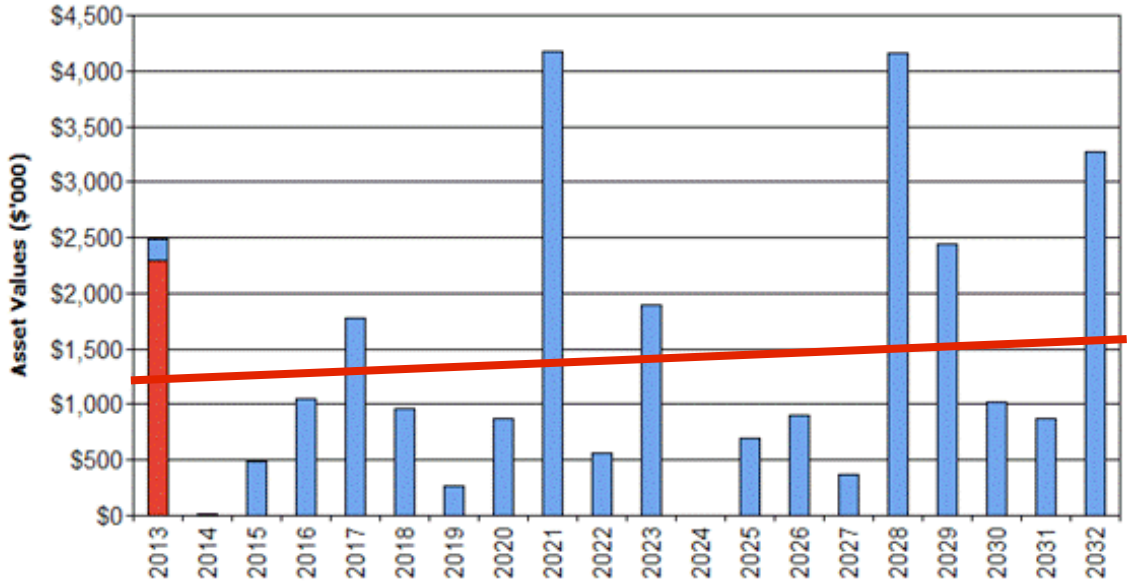
STRAIGHT LINES: OR

WHY IT MAKES SENSE TO CONSIDER FLATTENING YOUR PEAKY RENEWAL PROFILES

Renewal Profiles are naturally 'lumpy'

However organisations find dealing with lumps very difficult - it is not easy to upsize and downsize every year or so in particular areas to cope with renewal.

Organisations would rather flatten out the peaks. Often an outsourcing contract is chosen for this very reason. This often brings other problems in its wake. So it makes sense to see what you can do to flatten your own peaks - and when you consider how the profiles were drawn up, this makes a great deal of sense.



We may argue that to bring asset renewal forward would waste resources and to delay renewal would put the organisation at risk of lower service levels or worse, however this assumes that

1. We have got the renewal dates precisely right, and
2. We have got the unit costs precisely right
3. We have fully taken the benefits of flattening into account

Let us examine these assumptions:

Assumption 1: We have got the renewal dates precisely right

1.1 When modelling the expected renewal dates of our infrastructure components we work on the basis of averages as we discussed in "Not a Dot" on pp.5-6 of this issue. If the economic lives of a particular type of component range from, say 20 to 40, we take 30 as the point at which we predict renewal. *So we can be out by as much as 10 years!* Who can put their hand on their heart and say that they know for certain exactly what the economic life range really is? Even where we have good data for past assets and we are projecting over a large class of assets so that the law of large numbers has a chance to operate, do we know what effect, precisely, new materials, construction methods, or conditions of use will have?) **So, first off, let us recognise that our figures are not precise.**

1.2 If we are dealing with large numbers of similar components we might expect that the 'overs' will offset the 'unders' and give us a reasonable approximation to the funding required. However the smaller the number of components we are dealing with - say just a few buildings, or only one - the greater is our likely margin of error. **The more precise we are in component selection therefore the greater the chance that our lives will be in error**.

1.3 If we are dealing with large numbers of similar components we can recognise the fact that a certain proportion of the components will fail at less than 30 years or greater than 30 years by using 3 period rolling averages. **Spreading the renewal over the economic life range is a more accurate reflection of reality and will have the effect of 'flattening' the profiles**

Assumption 2: We have got the unit costs precisely right

2.1 Whenever we have peak renewal needs, we put a strain on the available material and labour resources needed to deal with them. We have to call in material and labour from further afield - at extra cost. We may also have to use a lower quality of both if we exceed current market capacity, which also raises the unit cost. However the unit cost figures we use in the renewal projections do not take this peak period pricing into account. **It follows that where there are peaks in the renewal of particular components, or in the use of specialised types of labour, the costs in the renewal profiles understate the real cost. Flattening the renewal line reduces costs closer to those projected.**

2.2 The peaks can greatly increase the unit costs in cases where operations are remote, say remote oil and gas or mining sites. But they can also have a major impact in remote areas and country towns. **If your site is situated away from the market, peak loading will have a major impact on your costs - but these will generally not show up in your renewal profiles.**

Assumption 3: We have fully taken the benefits of flattening into account.

3.1 Peak renewals may mean closing down sections of plant or infrastructure with consequent effects on service. **This may well mean that arrangements have to be made to provide for alternative service supply - and the costs of these arrangements are also not in the renewal profiles.**

3.2 On the other hand, doing as much renewal as possible when the system is down for another purposes makes sense. Components in a complex system cannot be modelled independently, choosing economic lives for asset components without regard to the system as a whole is only done for purposes of depreciation, but for purposes of planning we need to take account of the inter-relationships of components. For example, if we know that a major rehabilitation is due in two years time, we may well choose to defer some component renewal and do it, instead, at the time of the rehabilitation. **Component lives are not independent of what else is going on.**

3.3 Nor should we ignore the benefits for financial management!

Assumption 4: Note the initial red bar.

4.1 Nearly all renewal forecasts will have an initial peak representing those elements that have exceeded the lives used in the model. This is generally claimed to be backlog but - remember the arguments that John Howard put forward in the last two issues of SAM! - backlog may well indicate that asset managers have chosen economic lives that **are NOT the lives that the organisation's decision makers are working to.**

Assumption 5: There is nothing we can do

5.1 For renewal peaks that are near term we can bring them forward or push them out. This MAY involve costs of wastage or reduced service, but given the level of accuracy with which we are able to project renewal, this is by no means certain. **And any such costs need to be offset against the greater ability of the organisation to manage its finances.**

5.2 Finally, take especial note of the peaks that are some years away. The advantage to knowing when there is a large renewal peak coming (say the replacement echo of a large scale upgrade, such as installing air conditioners in schools) is that you can start planning now to 'smooth the peak', not only by deferring or bringing forward renewal, but by changing completely the way that the service is provided. The longer the planning horizon the greater the scope, so large renewal peaks in the future should be analysed not only for their impact on costs, but also for the opportunity to make major change in service provision, even to make major changes to the type of services provided. **The main purpose of renewals forecasts is to provide timely informati**on.