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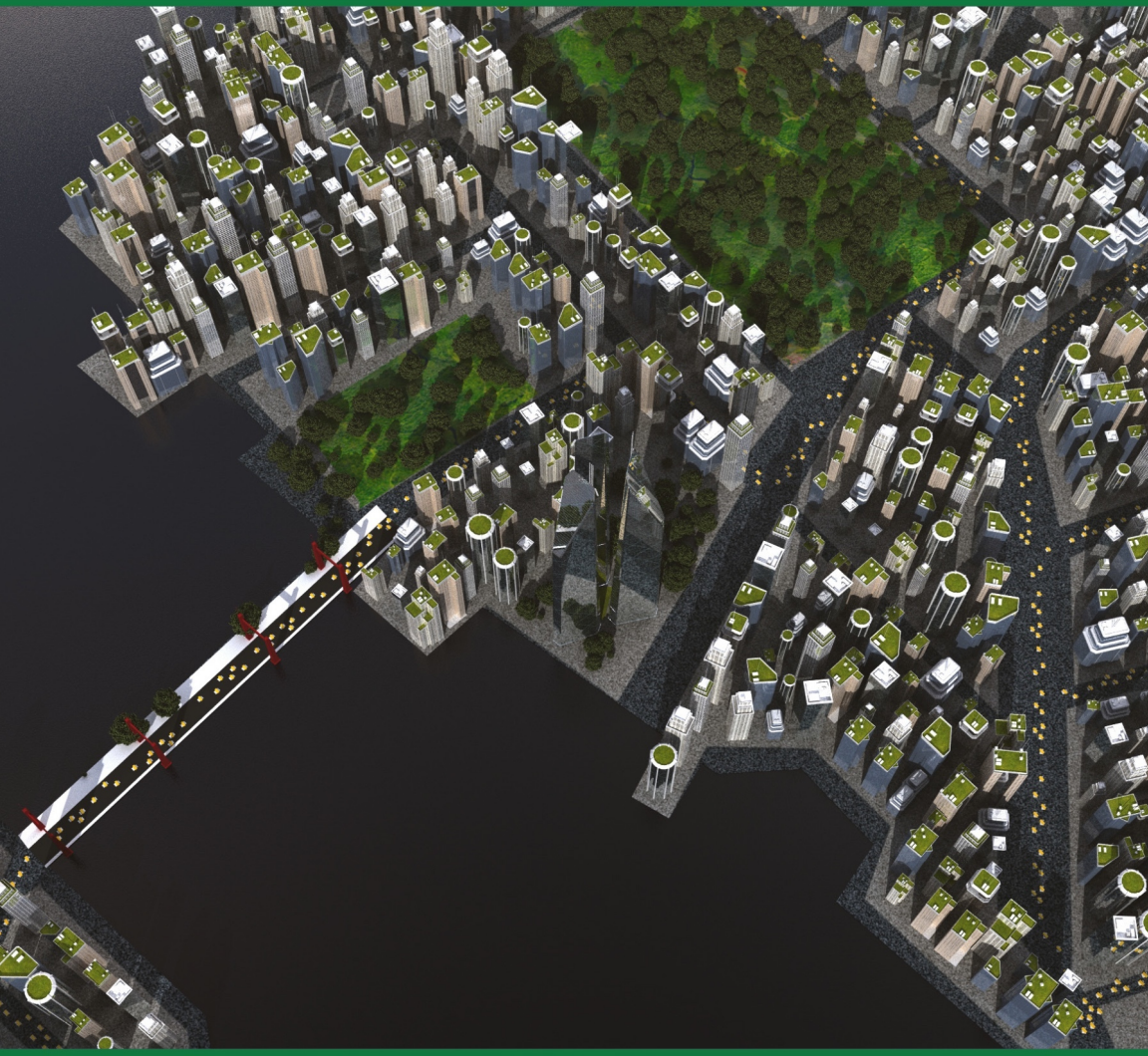
Updates on SCAN sensemaking

New developments for the SCAN model



Tom Graves

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This book is for sale at http://leanpub.com/tp-scanextra

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Contents

SCAN: SAMPLE

This is a sample of the content from the Tetradian ***SCAN Update*** anthology.

This anthology from the Tetradian weblog covers the **SCAN** model-type and its related uses and modelling methods. SCAN is used to guide sensemaking and decision-making in contexts with varying levels of complexity, uncertainty and uniqueness.

The initial anthology in this set was published in 2014. The 2022 update in this book adds around 35 posts and 125 images, representing new material on SCAN published on the weblog since 2014.

This sample contains around one-tenth of the content from the full anthology. The posts in the complete book are split into three groups:

- *SCAN: Core Extensions* - provides new concepts, insights and methods for the core SCAN framework.
- *SCAN: Complexity* - explores further work on theory and practice on complexity, and how this relates with the SCAN framework.
- *SCAN: Usage-Examples* - presents a range of real-world examples where the SCAN framework helps to explain a concept or concern and is put to practical use.

For further information on enterprise-architectures and more, visit the **Tetradian weblog** at weblog.tetradian.com[1]. The weblog currently includes some 1400 posts and more than a thousand images,

[1] http://weblog.tetradian.com

and is at present the world's primary source on *whole-enterprise architecture* - methods, principles and practices for architectures that extend beyond IT to the whole enterprise.

For more ebooks and anthologies on enterprise-architecture and more, visit the **Tetradian website on Leanpub** at leanpub.com/u/tetradian[2]. (Each anthology contains around 30-40 posts from the weblog.)

Some books are also available in print format, from all regular book-retailers. For more details, see the 'Books' section on the main **Tetradian website** at tetradian.com/books/[3].

[2] https://leanpub.com/u/tetradian
[3] http://tetradian.com/books/

Two SCAN notes - 1: Edges

The SCAN[4] framework describes sensemaking and decision-making in terms of four distinct 'domains', by convention labelled as Simple, Complicated, Ambiguous and Not-known. But what happens at the edges?

(The domains themselves are fairly distinct, anyway, in the sense that viable sensemaking and decision-making tactics change radically from one domain to another. Note, though, that the boundaries between those domains can move around dynamically, often by quite a lot, and it can sometimes be useful to use other labels too - as we'll see in the next the other of these 'Two SCAN notes' posts. Also - and importantly - the whole thing is fractal and recursive: a context that seems to be 'in' some domain or other will always contain elements of the others as well. Yeah, it's kinda tricky… But let's get back to *this* part of the story for now.)

In an ecosystem, most of the most interesting things happen at the edges. And it looks like much the same would be true of SCAN: what's come up in the past few weeks is that the edges between domains - the transitions between different overall approaches to sensemaking and decision-making - seem almost to be the key to the whole thing.

(A quick note for Cynefin[5] aficionados: you should probably see some similarities here with the 'Cynefin dynamics', the putative pathways between Cynefin domains. Some aspects of those similarities would arise automatically, because the two frameworks do apply to similar and related needs and concerns; but there are also

[4] http://weblog.tetradian.com/tag/scan/
[5] http://en.wikipedia.org/wiki/Cynefin

some fundamental differences, particularly around how the flows actually work in SCAN, and what passes along them. As a result of that, you may find that there are some potentially-useful cross-maps between the two frameworks on this matter of edges - though for various reasons I'd best not comment on it any more than that.)

I introduced this notion of edges in SCAN, in a lighthearted way, in the slidedeck[6] for my presentation at the Integrated-EA 2014 conference[7]. What I'll do here in this post is provide a bit more detail.

Overview

SCAN has two dimensions:

- *vertical-axis* of arbitrary scale from 'NOW!' to infinity, in effect representing the amount of time still available before a decision for action (at 'NOW!') *must* be made
- *horizontal-axis* of arbitrary scale from absolute-certainty (left) to absolute-uncertainty (right), or absolute-sameness to absolute-uniqueness, or any similar dichotomy of that type

In practice, there is a distinct boundary that occurs at some contextually-variable point along each of these axes:

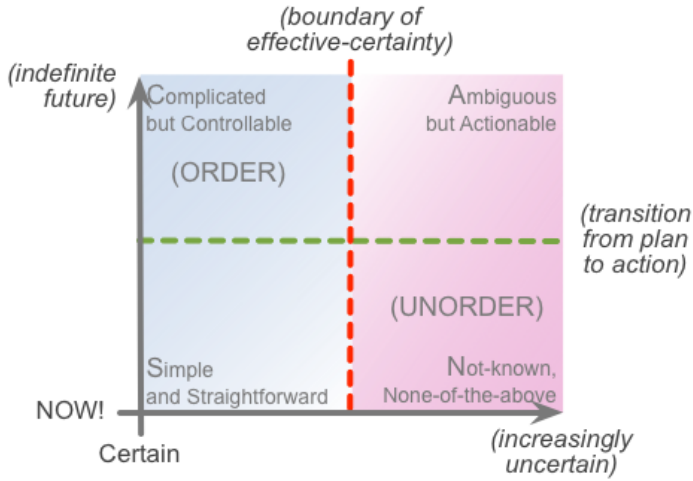
- *vertical-axis*: 'transition from plan to action' - decision-making is simplified right down (typically to predefined rules or principles) to enable action at the highest possible speed, by minimising the need to stop and think during action

[6] https://www.slideshare.net/tetradian/the-dungbeetles-tale-systemsthinking-complexity-and-the-realworld

[7] http://weblog.tetradian.com/at-integrated-ea-2014/

- *horizontal-axis*: 'boundary of effective-certainty' - on the left-side, decisions are essentially known or knowable ('tame-problems'), whereas to the right, decisions become increasingly ambiguous and uncertain ('wicked-problems')

In effect, this partitions the context-space map into four 'domains', with dynamically-variable 'size', dependent on the effective positioning of those boundaries within that context:

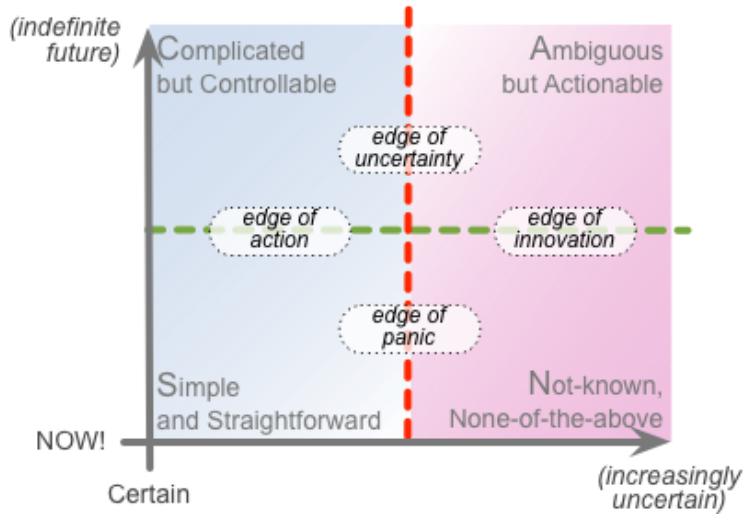


Although there are only two boundaries in this schema, this in effect gives us four distinct edge-transitions:

- *edge of **action***: transition between plan and action, where the decisions about what to do are essentially already-known
- *edge of **uncertainty***: transition between certain and uncertain ('known' versus 'unknown'), but at some distance in time from the point-of-action
- *edge of **innovation***: transition between plan and action, where the decisions about what to do are *not* already known or certain, and/or where new information or experiences are needed or implied

- *edge of* ***panic***: transition between certain and uncertain, or known and unknown, either at or close to the point-of-action

Or, in visual form:



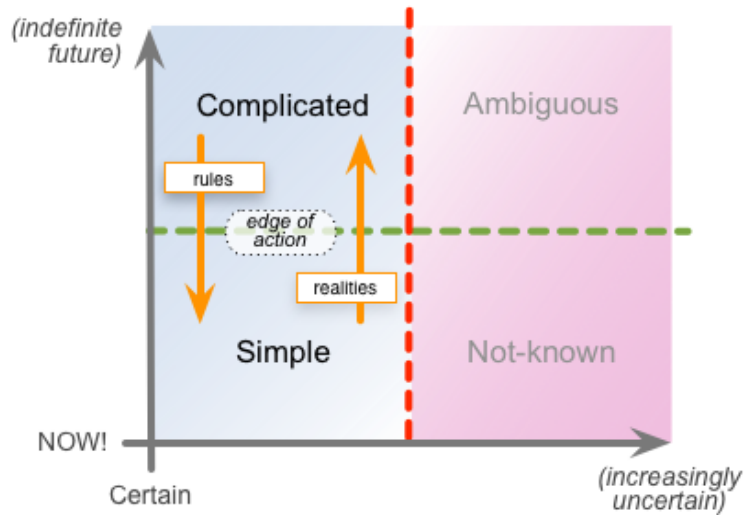
The next sections describe in turn what happens at each of these edges.

Edge of action (Simple :: Complicated)

The transition across this edge is the difference between plan and action:

- *plan* is what we *intend* to do in the *expected* conditions
- *action* is what we *actually* do in the *actual* conditions at the time

(In some ways, it would be more accurate to replace the label 'Complicated' with '*Theory*', and 'Simple' with '*Practice*', but the terms 'Simple' and 'Complicated' have become so well established now that it's probably best to leave them as they are.)



In the feedback-loop across that edge:

- 'Complicated' provides simple *rules* for Simple to enact in real-time practice - often packaged as an actionable *plan*

But (to paraphrase von Clausewitz) "no plan survives first contact with Reality Department"; hence:

- 'Simple' returns information etc about *realities*, to help Complicated revise the plan - preferably in near-real-time

We can see this happening recursively in contexts such as helpline service, where the realities coming 'upward' from one level have to be escalated to successively-higher levels of Complicated in order to be resolved, and then finally filter back down again as

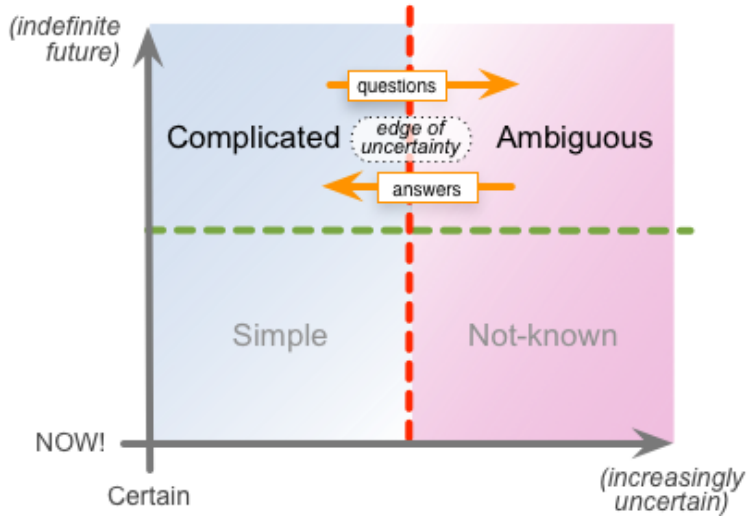
successively actionable ‘rules’. At each move ‘upward’, the focus moves further and further away from the immediate real-time contact, and requires increasing levels of ‘time to think’ - though note that each level, recursively, also has its *own* versions of Simple and Complicated, of action and ‘stop and think for a moment’ plan.

Edge of uncertainty (Complicated :: Ambiguous)

The transition across this edge is the difference between analysis and experiment:

- *analysis* refines existing *answers* (via *algorithms* etc) to derive usable rules for Simple, but is unable to handle anything ‘outside of the box’
- *experiment* applies *questions* (via *guidelines and patterns*) to variously-unknown contexts, in search of usable *answers*

Note that both of these sets of activities take place at some distance in time ahead of the moment-of-action:



In the feedback-loop across that edge:

- Complicated passes to Ambiguous any *questions* that it cannot resolve within its existing algorithms
- Ambiguous passes to Complicated any *answers* that are (or seem) sufficiently-certain for Complicated to be able to use

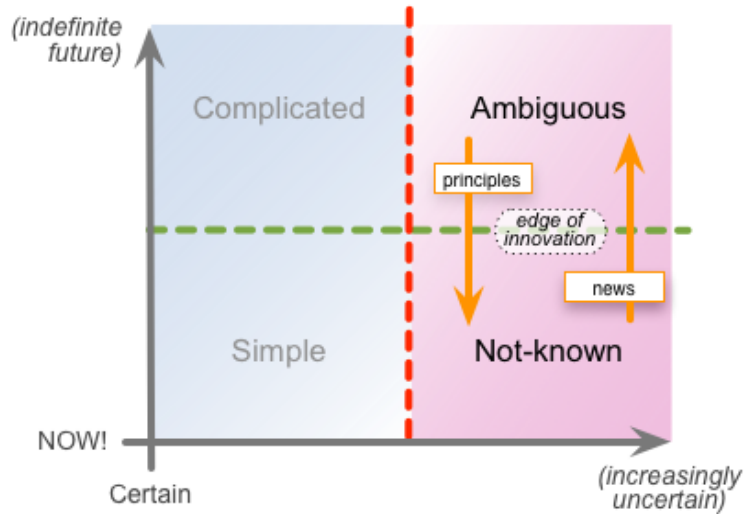
Again, this is recursive, with level upon level of complexity being addressed, usually further and further away from the moment-of-action. ('*Complexity*' here is a catch-all term for everything that happens in these two 'upper' domains - which, via recursion, also in effect occurs in the 'lower' domains, though in less overt or visible form.)

Edge of innovation (Ambiguous :: Not-known)

The transition across this edge is the difference between semi-structured experiment and free-form exploration:

- *experiment* applies *hypotheses* to test possibilities with a given context
- *exploration* will *delve into* a context to elicit *ideas* and *experiences*

Note that both of these sets of activities take place under varying and, often, increasing uncertainty:



In the feedback-loop across that edge:

- Ambiguous passes to Not-known various *principles* that provide some form of reference, guidance, anchor or 'seed' for sensemaking in the real-time 'unknown' - "in the field of exploration, chance favours the prepared mind"
- Not-known returns to Ambiguous various ideas, information and other *news* that may be used in experiments

It's important to note that, *by definition*, the *only* place where anything new can be found is in the Not-known. If we are to find the ideas and experiences we need for invention and innovation,

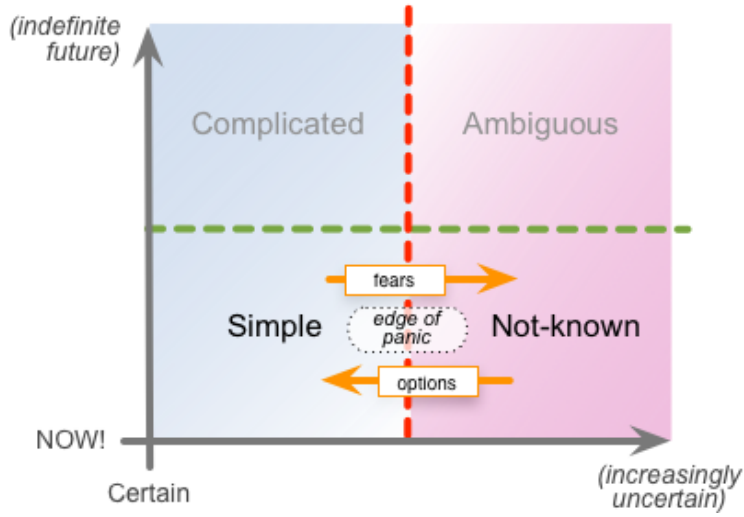
we need to be willing to "become comfortable with being uncomfortable" in the Not-known, and to work with that 'the unknown' *in real-time*, rather than only 'from a safe distance'.

Edge of panic (Simple :: Not-known)

The transition across this edge is the difference between structured-process and free-form improvisation:

- *structured-process* follows predefined *work-instructions* to deliver a *predetermined outcome* in a (nominally) known context
- *improvisation* follows *chance and serendipity* - often with the assistance of guiding principles and 'seeds' - to return a *useful and/or meaningful experience* within a potentially otherwise-unknowable context

Note also that both of these sets of activities take place at or close to the moment-of-action:



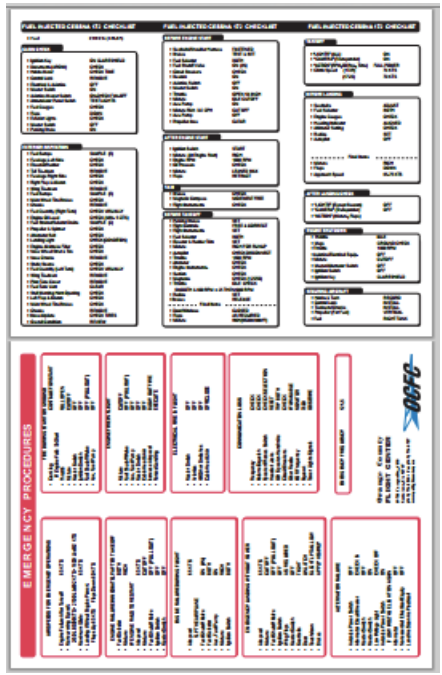
In the feedback-loop across that edge:

- Simple passes to Not-known its *fears*, arising from loss of certainty, or from real-world responses that don't match Simple expectations
- Not-known returns to Simple any *options* that are (or seem) sufficiently-certain for Simple to be able to use

Note the symmetry here with the questions and answers that pass back and forth between Complicated and Ambiguous: the difference is that for the Simple::Not-known loop, all of this happens at or near real-time, and - for humans - often carries an emotional-loading that is not (or, ideally, should not) be so prevalent further away in time from the moment-of-action.

An *action-checklist*[8] is a classic example of a tool that bridges across this edge:

[8] http://weblog.tetradian.com/checklists-and-complexity/



(Adapted from original by OCFlightCenter)

The routine checks (in black, in the checklist above) provide Simple *rules* to guide real-time actions - whose purpose is to minimise the risk of traversing over to the 'uncertainty' side of the context. The emergency-checks (in red, in the checklist above) are called-for when *fears* arise as the context moves too far into uncertainty, and provide *options* that can be tested and acted-on in a Simple way - ideally returning the context to return back over to the certain/Simple side.

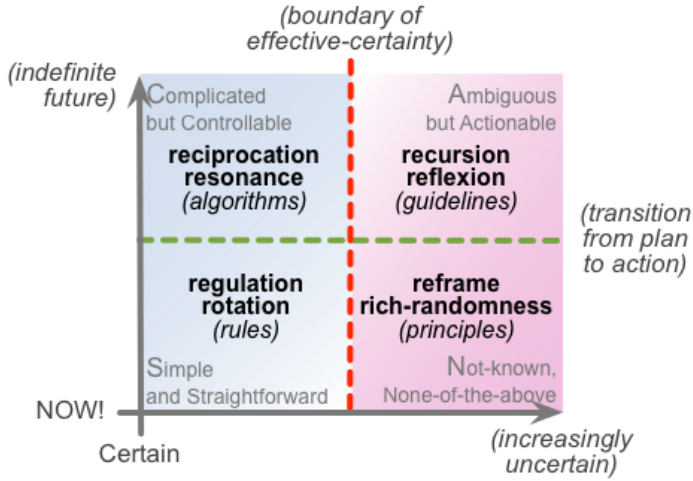
Linking it all together

In any real-world context, *all* of these domains and edges will be in play in some way or other, all interleaving with each other at

various distances from the respective moment-of-action, and at varying degrees of certainty or uncertainty.

In that sense, *all* of the feedback-loops will be happening at the same time, in various ways and in varying levels of priority and relevance for the immediate context in play.

The catch here is that different tactics and techniques are needed in each of the different domains, such as in this visual summary:



The fundamental requirement here is ***"don't mix them up!"*** - trying to use techniques from one domain in a different domain is usually not a good idea… (The one place where it *can* be useful in the Not-known domain, where the mismatch acts as a kind of reframe - in other words, as another form of recursion!) Hence, in turn, it's *really* important to be aware of which domain is effectively in play at any given moment, and/or which edge is being traversed, and in which direction.

Overall, yeah, all a bit technical, I know… But it really *is* worth the effort to step back a bit sometimes, and watch how all of this works in real-world practice - because it's how we *do* get better at doing things more effectively, and in ways that we actually want.

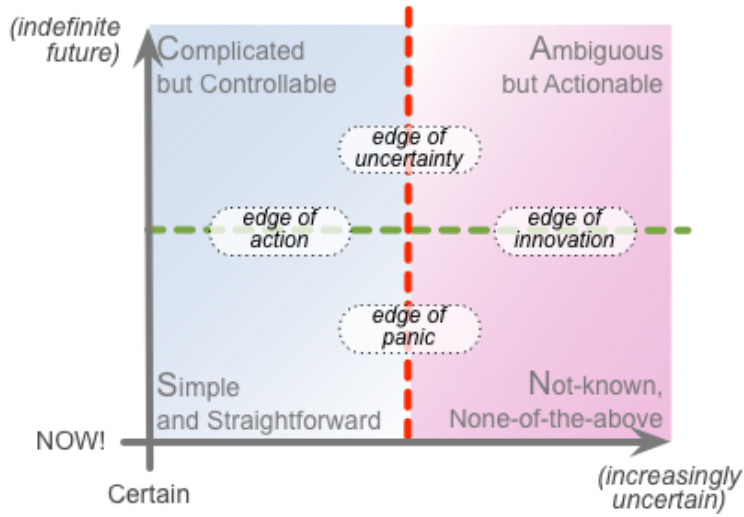
Source (Tetradian weblog)

- *Date*: 2014/02/28
- *URL*: two-scan-notes-1-edges[9]
- *Comments*: (none)
- *Categories*: Complexity / Structure, Enterprise architecture
- *Tags*: complexity, context-space mapping, decision-making, Enterprise architecture, Knowledge, narrative, SCAN, strategy

[9] http://weblog.tetradian.com/two-scan-notes-1-edges

Insights on SCAN: The bubble-metaphor

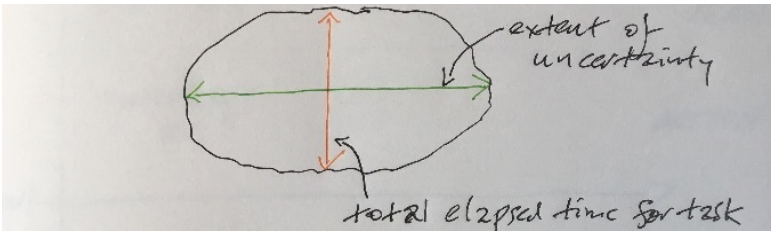
In the work we're doing[10] to make the 'bucket-list' of sensemaking-tools[11] more accessible to general users, occasional insights arise that make the tools themselves richer and more powerful. There've been a bunch of those recently from our work on SCAN[12], about sensemaking and decision-making in run-time action:



The first of these insights is a new metaphor for SCAN itself, developed by our designer Joseph Chittenden[13]. It models each task as a bubble, whose size we indicate in terms of the SCAN dimensions - extent of certainty and uncertainty (horizontal), versus total

[10] https://www.patreon.com/tetradian
[11] http://weblog.tetradian.com/2017/08/13/an-inventory-sorted/
[12] http://weblog.tetradian.com/tag/scan/
[13] https://jc3dvis.co.uk/

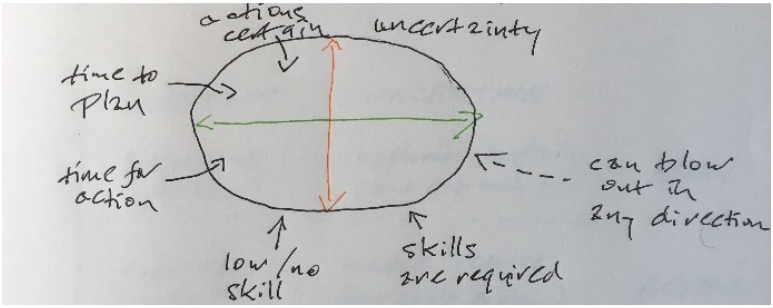
elapsed time for the task (vertical):



In the vertical dimension, above the line is the amount of time needed to plan and get everything ready for the task; below the line is the amount of time needed to do that task.

In the horizontal dimension, to the left is the extent to which the task-activities to deliver the aims of the task seem to be (upper left) versus actually are (lower left) reducible to simple step-by-step sub-tasks; to the right is the extent of activity known to contain uncertainties to be addressed in planning (upper right), versus uncertainties that can or will only arise at run-time, and can only be addressed in run-time action. Run-time certainties (lower left) can be addressed by machine-type automation and/or by low- to no-skill human action; run-time uncertainties can only be addressed successfully by human or human-like skills.

The crucial understanding that we get from the bubble-metaphor is that the effective time-to-execute and complexity of a task can blow out in any of those directions:

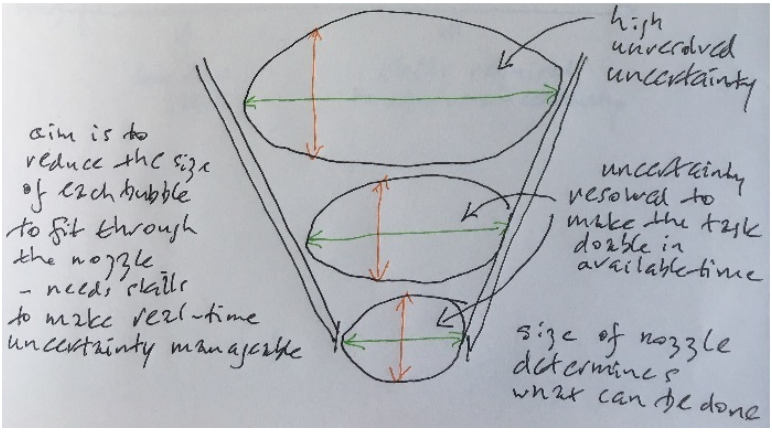


Think of the available run-time capability - the respective 'ability to do work' - as being a constrainer like the nozzle of a funnel. In terms of the metaphor, task-throughput would be constrained by the size of the nozzle, and the size and flexibility of the bubbles that we try to push through the nozzle. If we have high capacity for simple/certain tasks, but low capacity for complex/uncertain tasks, every task with high real-world complexity will tend to jam in the nozzle, reducing the effective throughput *regardless of how much simple-task capacity we have.*

When we hit up against run-time uncertainty that won't fit through the nozzle, what happens next depends on the 'flexibility' of the bubble. 'Flexible' means that there is still some capacity available to resolve uncertainty *away* from the run-time action (upper-right in the bubble). If so, then we may be able to pull back and use that to reduce the effective width of the bubble - though at the cost of taking more time to do the overall task, or, in terms of the metaphor, stretching the vertical dimension of the bubble. If there's no such 'offline' capacity - an 'inflexible' bubble - then the task will jam up in the nozzle, blocking any further progress on task-delivery until those challenges *are* resolved. This happens a lot in 'efficiency'-obsessed organisations that delude themselves into a belief that everything can be reduced to simple rules, and that real-world uncertainties can be somehow wished-away…

The key here is to apply 'just enough' exploration *before* run-time, to reduce the 'unknown-unknowns' over on the right-side

of the bubble, and *also* maintain enough skills-capacity to cope with inevitable run-time uncertainties. In effect, to reduce the 'horizontal' size of a task-bubble, we need to do things like virtual-walkthroughs and so on, to elicit warnings about potential for, and potential impacts of, any run-time uncertainties - and do this *before* the task gets close to that nozzle of run-time.

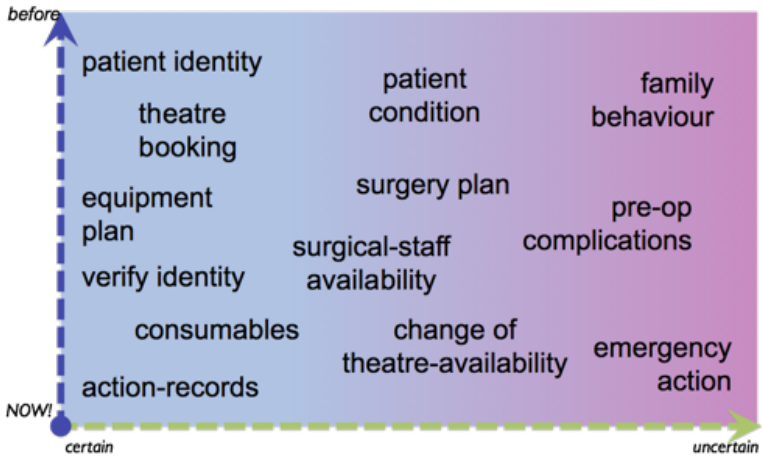


And to reduce potential 'blow-out' in the vertical dimension - the overall execution-time for a given task - we need sufficient capability on-call to act on and resolve run-time uncertainties, if run-time staff do not themselves have enough skill to resolve the uncertainties on their own. For example, the staff in a troubleshooting call-centre will often need be to those with the *highest* skill-levels in that context - and *not* merely those who can read a step-by-step script.

The bubble-metaphor doesn't replace the existing SCAN frame - it's just another way to look at the same issues, particularly when we assess how a set of tasks in a complex real-world context can interact with each other, and what we need to do in order to reduce the risks that any single task could 'clog up the works' for a broader overall outcome.

For example, consider the set of tasks that need to happen before a

surgical operation takes place. We could map these out in relation to each other on a SCAN frame, in terms of probable-uncertainty (horizontal) and how far ahead in time (vertical) each must occur, relative to the 'Now' of the operation itself:



In the bubble-metaphor, each of these tasks is a 'bubble' in its own right; and each must pass through the respective metaphoric nozzle *before* the task-bubble for the overall surgical-operation itself can do so. We can then use the bubble-metaphor to help reduce the risk that any task-bubble might blow out in either dimension, slowing or blocking progress towards the overall desired outcome.

Is this metaphor useful to you? Is it worth developing further? Or is it just a distraction, one metaphor too far? Let us know your comments on this, if you would.

Source (Tetradian weblog)

- *Date*: 2018/02/26

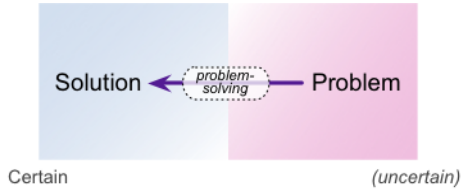
- *URL*: insights-on-scan-bubble-metaphor[14]
- *Comments*: (none)
- *Categories*: Business, Complexity / Structure, Enterprise architecture
- *Tags*: complexity, decision-making, Enterprise architecture, SCAN, sense-making

[14] http://weblog.tetradian.com/insights-on-scan-bubble-metaphor

Sensemaking: Into the void

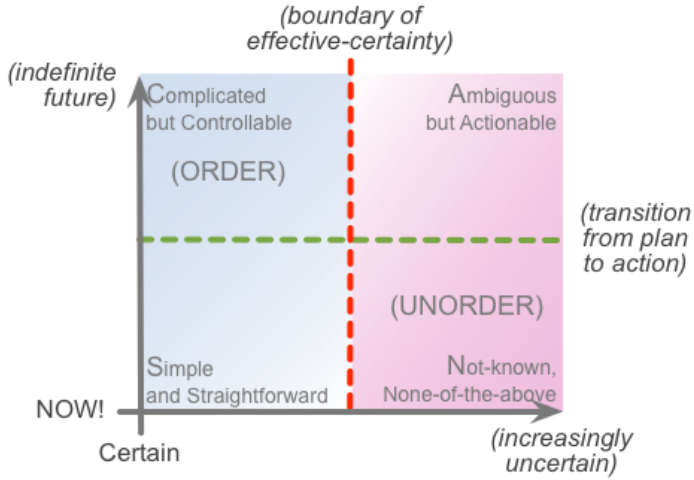
How do we make sense when we don't know what's going on? What happens when we find ourselves diving into '**the void**' of the unknown and uncertain? And what can we *do* there, to make enough sense of 'the unknown' to make *useful* decisions?

All too often, the standard approach seems to be what's described as 'solutioneering[15]'. We label the unknown as 'the problem', then grab at the first answer that comes our way, and declare 'problem solved!' - whether or not this supposed 'the solution' matches the underlying need at all:



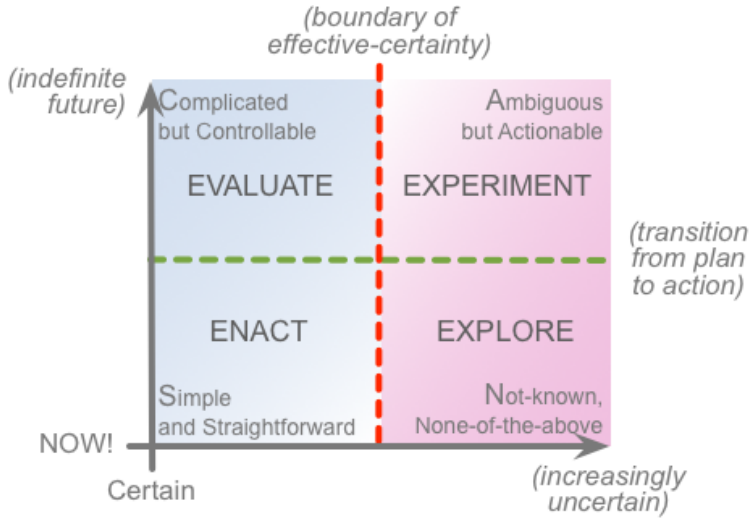
For me, a more useful way to tackle this is to take a careful look down into the lower-right corner of the **SCAN**[16] frame:

[15] http://howtomakelightning.com/learning-over-solutioneering
[16] http://weblog.tetradian.com/tag/scan/

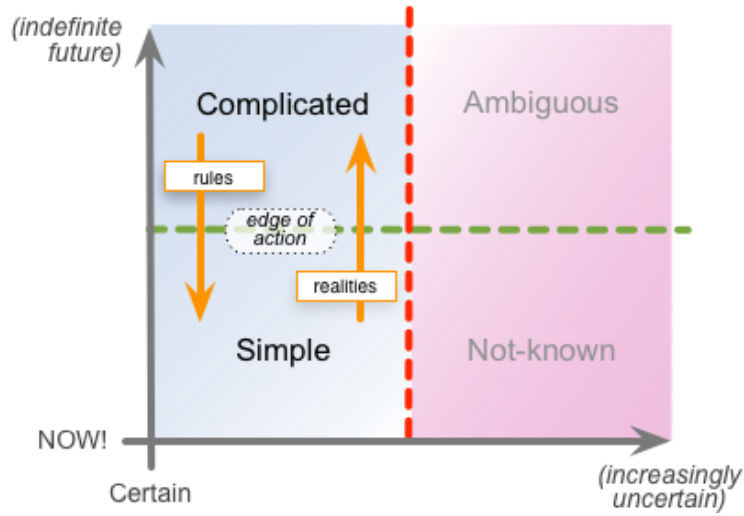


Down in that corner is the world of the Not-known, the None-of-the-above, the world of deep 'unorder' - a ***cacophony of 'No-thing'*** where everything and nothing is possible, all at the same time:

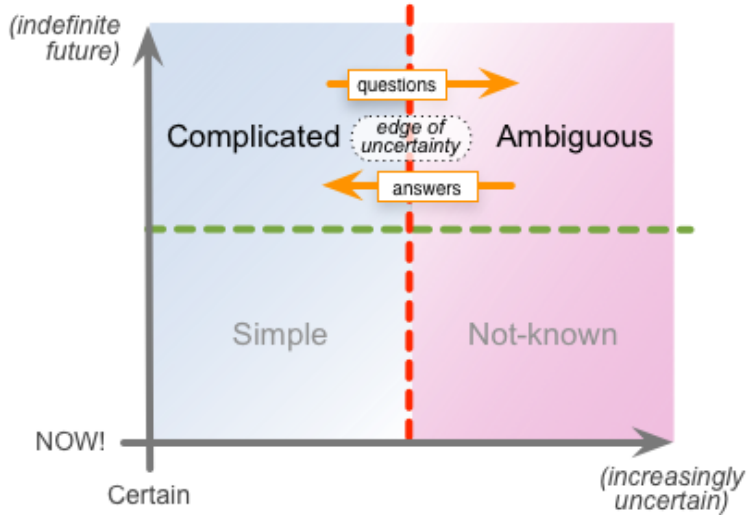
Or, to put it another way, the place where we not only can but *must* explore the unknown - whether we like it or not:



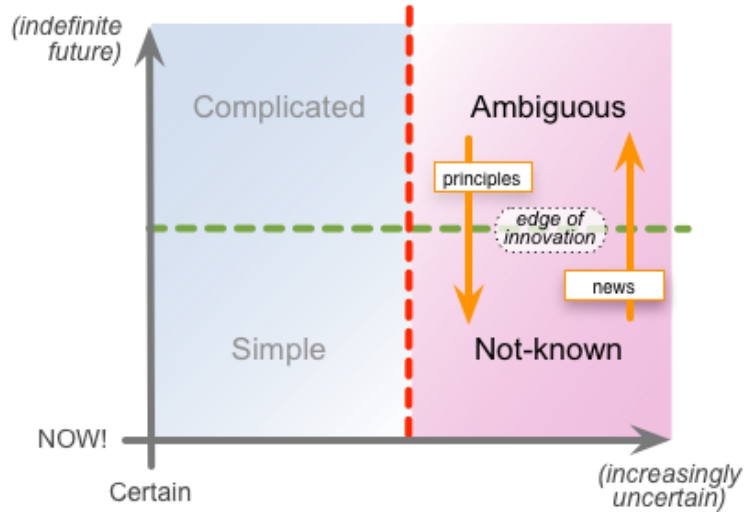
When everything seems certain, we barely touch that lower-right corner at all - we strip down our complicated plans into simple rules for action, and maybe amend them as needed in terms of a bit of feedback from Reality Department:



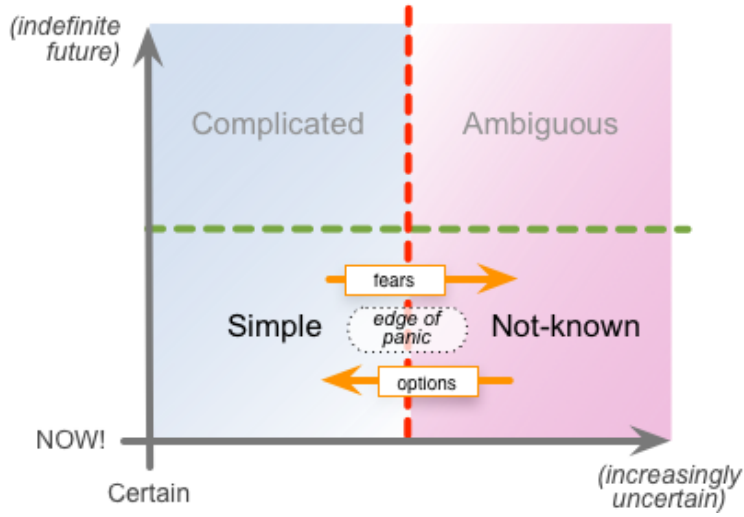
When we're not rushed for action, we can dip into the complex, ever-ambiguous world of uncertainty via a leisurely loop of questions and answers:



By definition, though, the *only* place where we can find anything new is somewhere different, somewhere new - which means that our experiments in the relatively-comfortable world of the merely-ambiguous will at times depend on a deep-dive down into the ever-uncertain maelstrom of the Not-known:



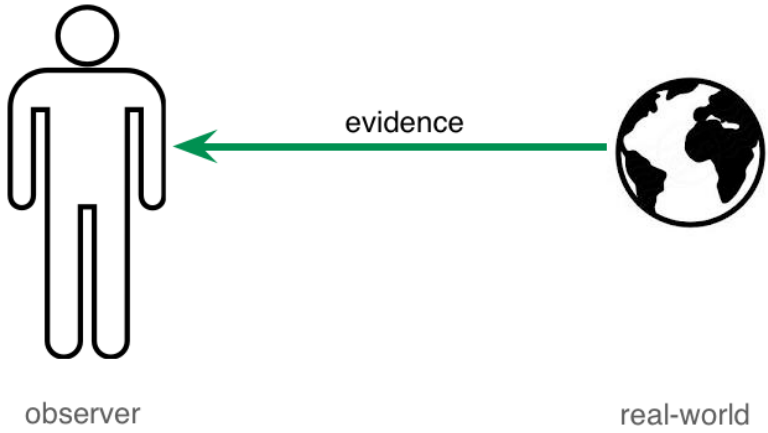
A dive down into the unknown from the domain of ambiguity, aware from the real-time, pressure and stress, is usually quite a calm affair - a pleasurable frisson of fear, perhaps, but not much more than that. Not so, though, if we're thrown into the not-known at run-time, when we hit up against something that doesn't match up to 'the rules' or the current expectations. The amount of uncertainty may vary, but the fact that we get thrown across the 'edge of panic' at all will always bring on at least some element of very real fear:



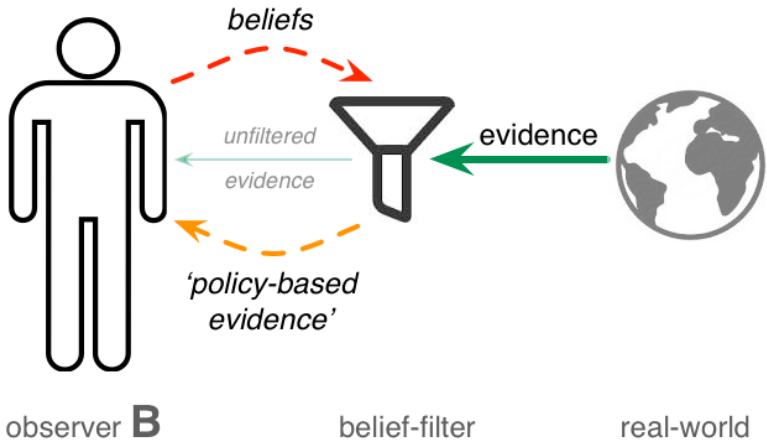
So how do we deal with that fear, and instead find *useful* ideas and options from with the Not-known?

The short-answer is that we 'seed the space' - such as with overarching principles and the like, as seen in that setup for a transition over the 'edge of innovation' as shown earlier above. The Not-known, the void, somewhere contains *every* possibility: 'seeding the space' provides a means by which we can filter out the probably-useful from the probably-not-useful, and allow an anchor around which useful options can coalesce.

Yet it's not as straightforward as it might seem, because we face a real Goldilocks problem here. If we use the term 'evidence' for the unfiltered flood of ideas, images and impressions that come our way over there in the Not-known, then placing no 'seed' for pattern-matching means that we'd likely all but drown in that chaos, with no means to make or find sense at all:



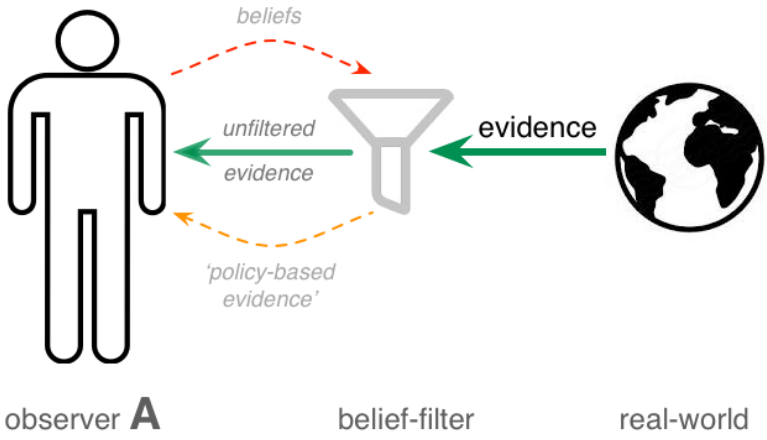
But if we overdo the filter - come into the Not-known with too many or too-rigid beliefs and assumptions - then all we'll do is feed an echo-chamber[17] of 'policy-based evidence'[18], where we'll likely block out any possibility of gaining the insights that we need:



The trick is to get the balance just right - not too little that we drown in overload, and not too much that would block us from any new

[17] http://weblog.tetradian.com/2015/07/06/services-and-disservices-3-the-echo-chamber/
[18] http://weblog.tetradian.com/2014/10/13/beware-of-policy-based-evidence/

insights, but 'just enough[19]':

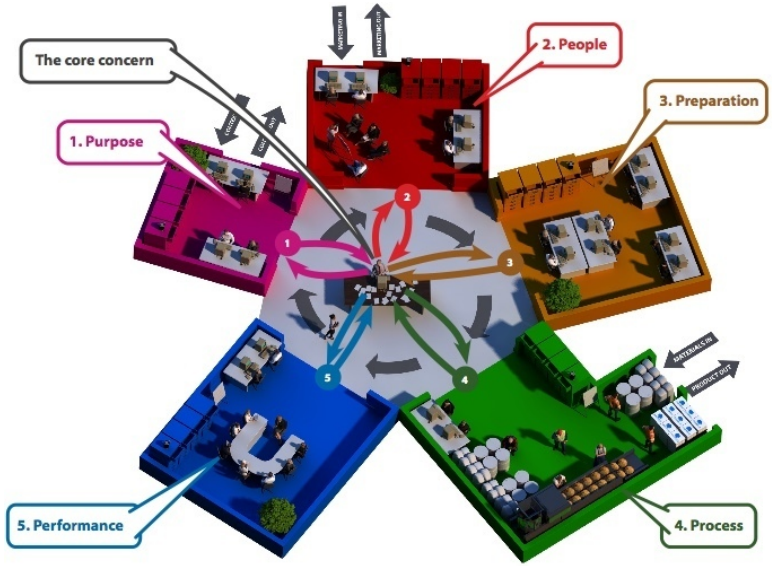


Our aim with the Five Elements frame[20] that we're using with 'the tools-inventory[21]' is to apply '**just enough structure**' and '**just enough method**' to work well with the Not-known. It's enough like a step-by-step that it's comfortable-enough and fast-enough to use in conjunction with real-time, run-time 'rules', yet also rich enough and versatile enough to support 'just enough' of seeding and filtering for *any* type of context at *any* scope and scale:

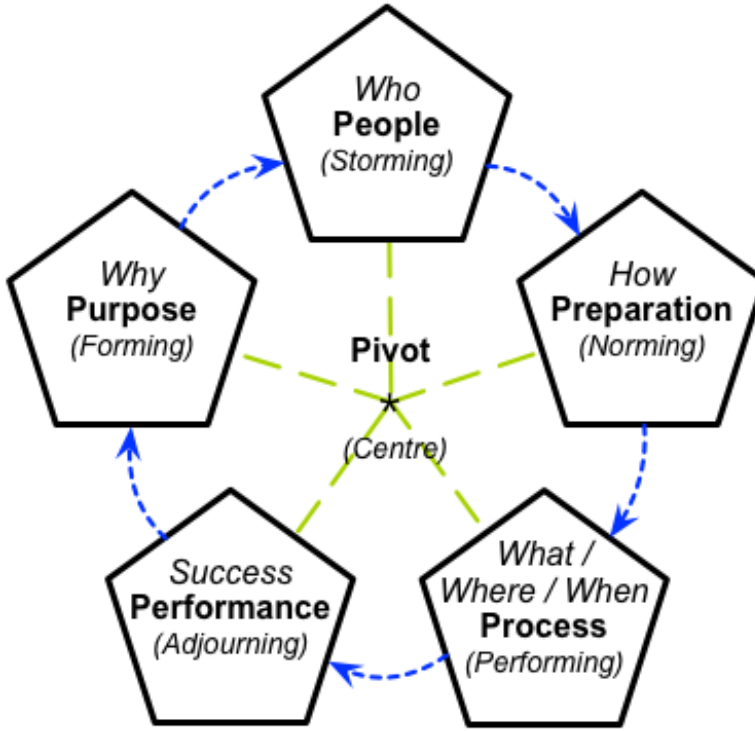
[19] http://weblog.tetradian.com/2012/05/08/just-enough-detail/

[20] http://weblog.tetradian.com/2016/04/27/towards-a-whole-enterprise-architecture-standard-3-method/

[21] http://weblog.tetradian.com/2017/08/13/an-inventory-sorted/



That's the 'pretty' version of Five Elements above, but we can also trim it down to something a lot simpler, even right down to a back-of-the-napkin scrawl:



But whichever way we draw it out, it always has that same attributes that we need for working with the unknown[22]:

– It's a ***method*** that can also work well with just about any other method.

– It's a ***checklist*** that can also work well with just about any other checklist.

– It's a ***structure*** that can work well with just about any other type of structure.

– It's a ***tools-platform*** that can link together all types of disparate

[22] http://weblog.tetradian.com/2016/07/26/methods-for-whole-enterprise-architecture-keep-it-simple/

tools, eventually across the entirety of the toolset-ecosystem.

– It's ***iterative*** and ***nesting***, so that it works in the same way, consistently, to any required depth of exploration, across all types of context.

If we want to make sense of something - *especially* when we don't know much about what's going on - we're going to need that kind of frame, with '**just enough simplicity**', to give us the right level of help that we need. If you're going to go down into the void, to search for new ideas and insights, don't dive down there without it!

Source (Tetradian weblog)

- *Date*: 2018/03/14
- *URL*: sensemaking-into-the-void[23]
- *Comments*: (none)
- *Categories*: Business, Complexity / Structure, Enterprise architecture, Futures
- *Tags*: change, complexity, decision-making, Enterprise architecture, Five Elements model, Futures, SCAN, sense-making

[23] http://weblog.tetradian.com/sensemaking-into-the-void

Auftragstaktik and fingerspitzengefühl

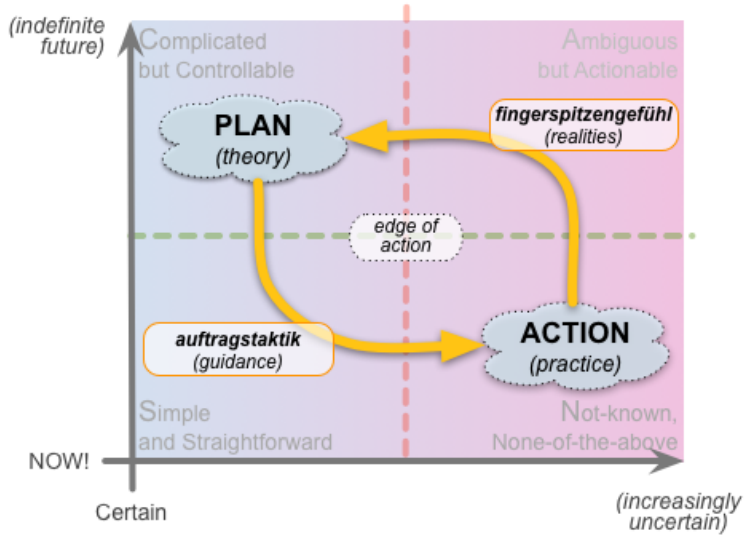
Two words: *auftragstaktik* and *fingerspitzengefühl*. To an English speaker, they might look kinda weird, but they're key to getting an enterprise to work well…

The terms originate from the German military, from around the early-19thC and mid-20thC respectively. They would translate approximately as:

- auftragstaktik[24] - literally 'mission tactics[25]', though also now often combined with more strategic 'commander's intent[26]'
- fingerspitzengefühl[27] - literally 'fingertip-feel', though conceptually more situational-awareness[28], an intuitive moment-by-moment sense and mental-map[29] of the state and dynamics of the context-space

The crucial point here is to understand that they work as a dynamic pair, to provide a self-updating bridge between strategy, tactics and operations, or, more generally, between plan and action. In terms of the SCAN[30] framework, we could map out the relationships between these elements as follows:

[24] http://foreignpolicy.com/2011/09/09/an-elusive-command-philosophy-and-a-different-command-culture/
[25] https://en.wikipedia.org/wiki/Mission-type_tactics
[26] https://en.wikipedia.org/wiki/Intent_(military)
[27] https://en.wikipedia.org/wiki/Fingerspitzengef%C3%BChl
[28] https://en.wikipedia.org/wiki/Situation_awareness
[29] https://en.wikipedia.org/wiki/Mental_mapping
[30] http://weblog.tetradian.com/tag/scan/



At the surface, all of this seems to be about *information*, which is then converted to *commands*:

> Even though there is no physical connection between the commander and his troops, other than conduits for discursive information such as radio signals, it is as if the commander had their own sensitive presence in each spot.

Yet it's not solely about information-flow. To illustrate this, let's look at perhaps the most famous Second World War example of an auftragstaktik / fingerspitzengefuhl loop, which is not German, but British: the Dowding System[31] used for the UK's air-defence in the Battle of Britain and beyond.

It's one of the first instances of what would now be recognised as a 'whole-of-enterprise' architecture. First, information from

[31] https://en.wikipedia.org/wiki/Dowding_system

radar and from observers on the ground (the '*realities*' for fingerspitzengefühl) is brought together into a central space for merging and interpretation.

The information is then filtered and simplified down into what we'd now describe as an 'information-object', representing a cluster of enemy aircraft, and its track over time (the *dynamics* for fingerspitzengefühl). In this example from a plotting-table, the red '20' represents the number of enemy-aircraft in the cluster, '25' represents the height (25000ft), and the yellow '92' and '72' are the identifiers for the defending fighter-squadrons assigned against them:

Image via Wikimedia

Yet an individual information-object, relevant though it would be, is just one element in the overall system. For example, the *relationships* between multiple information-objects give a much stronger idea of what's going on in the context-space:

Image via Wikimedia

There's also other information from other sources that needs to come into the picture, as seen in the boards in the background behind the plotting-table: squadron-readiness, fuel-levels and time-in-the-air, damage-reports, weather-dynamics and more.

And for their respective part of the overall story, the different stakeholders each develop their own interpretations - operational, tactical, strategic - from the picture developing on that dynamic map of the context-space:

Image via Wikimedia

All of those different views come together to form the *plan*, which then goes onward via the outbound-channels - such as the telephone-operators in the upper row in the picture above - as the auftragstaktik real-time guidance and intent for *action*.

As in this article[32] from the UK's Imperial War Museum, the relationship between information and command in the Dowding System is often depicted as a linear flow:

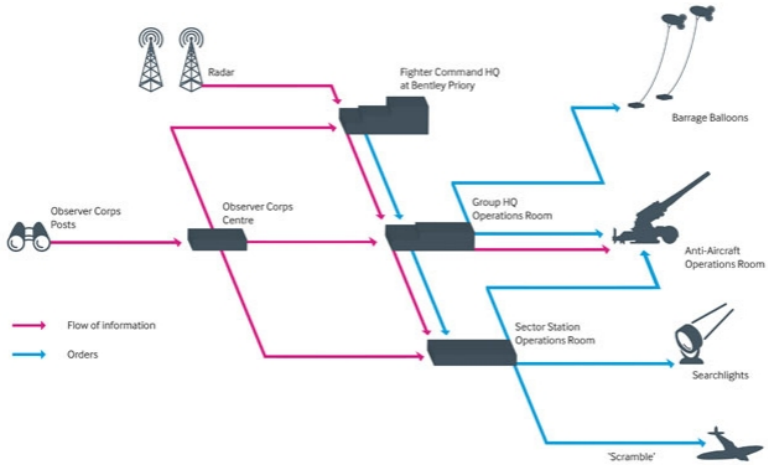


Image via (UK) Imperial War Museum

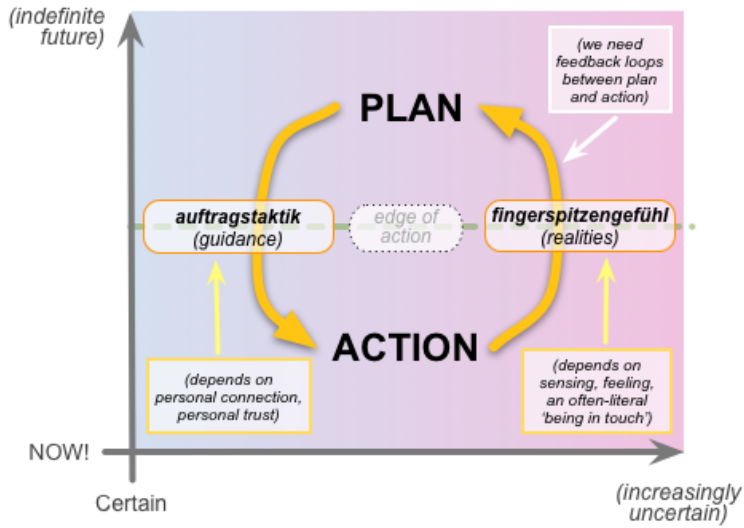
Yet describing the Dowding System in this way kinda misses the point - not least that there's a *lot* of information coming back from each of the front-line units at the end of that supposed one-way flow. Instead, the key here is that **auftragstaktik and fingerspitzengefühl provide a *feedback-loop*** that - unlike classic top-down command-and-control[33] - is able to respond to fast-paced change right down to *local* level.

The linear-flow description also misses the point that ***it depends on more than information alone*** - there are ***key human elements*** without which the auftragstaktik / fingerspitzengefühl loop risk fading away into nothingness. For example, auftragstaktik is deeply dependent on *trust*, which in turn depends on a sense of *personal connection* and *personal, mutual commitment*, whilst

[32] http://www.iwm.org.uk/history/the-air-defence-network-that-helped-win-the-battle-of-britain

[33] https://en.wikipedia.org/wiki/Command_and_control

fingerspitzengefühl depends on a more emotive form of *sensing*, of *feeling*, of an often-literal sense of '*being in touch*' with what's going on out there in the real-world:



In the Dowding System, for example, Dowding and the other commanders went to considerable effort to build in-person connections with flight-crews, maintenance-managers, radar-crews and all of the other players in the overall context. This not only builds trust, but a better sense of the extent of *who and how to trust*, such as the trustworthiness of information - a key concern in present-day social-media monitoring, for example.

(Not just trust, but other emotive elements too. Maintaining morale and commitment can be a huge challenge when, as in the context of the Dowding System, staff could well necessarily hear, over the air, their colleagues, friends, loved-ones, in combat, challenged, stressed, fearful, wounded, even dying, in real-time, moment-to-moment - sharing the stress but being unable themselves to do anything about it. Yet it's not just a military concern from a past war: much the same still happens every day in every civilian

emergency-services ops-room or call-centre, everywhere around the world. Helping staff to manage the stress and survivor-guilt[34] is a key *business*-challenge in these contexts.)

A related concern on the fingerspitzengefühl side of the loop is around how filtering of raw-data into structured-data forms tends to give rise to '*information with the crusts cut off*' - an *over-simplification* in which key information 'at the edge' gets lost, and from which inappropriate decisions may be derived. This is usually less of a problem when the scale of the enterprise is small, because the personal-relationships enable errors and misinterpretations to be corrected quickly. We still need to be wary of 'groupthink' and other forms of cognitive bias[35], but otherwise that kind of correction happens naturally for an individual or a classic 'two-pizza team[36]', and often implicitly up to the social-network limit of the Dunbar Number[37], or, in effect, the scale of a team of two-pizza teams.

Beyond that scale, though, we need to make ***deliberate and explicit efforts to maintain the non-structured aspects of the loop***. Even at a three-tier scale, a 'team of teams', there's a risk that people in the middle will start to lose contact with reality at either end of the loop - the plan, or the action. And once we get anywhere up to or above the five-tier scale - a theoretical maximum of around 12^4, or an organisation-size of around 20,000 (though often much less) - then there are huge risks that a combination of misplaced 'top-down' delusions and an absence of 'crusty' information from the real-world will result in a major disconnect in the middle layers of management. Those managers may, all too literally, be living in an imaginary world, based on garbled orders and over-filtered information, with little or no connection to business-reality at all. This is well-illustrated in a quote from a Foreign Policy article[38] on

[34] https://en.wikipedia.org/wiki/Survivor_guilt
[35] https://en.wikipedia.org/wiki/Cognitive_bias
[36] http://blog.idonethis.com/two-pizza-team/
[37] https://en.wikipedia.org/wiki/Dunbar%27s_number
[38] http://foreignpolicy.com/2011/09/09/an-elusive-command-philosophy-and-a-different-command-culture/

auftragstaktik:

> The other main reason for the defeat of the Wehrmacht [was] the sheer boundless arrogance of its officer corps. Being for so long the most famous and prominent group in a nation and admired by their countrymen and international observers alike left its pathological marks. The result became "a persistent tendency of most German Generals to underestimate the size and the quality of the opposing forces." [...] All those immense flaws of the Wehrmacht senior officers counterbalanced the excellence in command, tactics and leadership German officers displayed in World War II. The latter explains why the German army was such an outstanding fighting force on the tactical level but still unable to win the war.

In short, breaking the continuity and integrity of the auftragstaktik / fingerspitzengefühl loop is Not A Good Idea...

There *are* ways to do this right. For example, there are practical tactics such as 'conversational leadership[39]' (PDF), that not only develop the trust to support auftragstaktik, but also help to elicit the subtler information needed for full fingerspitzengefühl. In military contexts, there are often deliberate rituals to rebalance top-down management-architectures[40], to enhance opportunities for person-to-person connections across an overall unit, and to emphasise a sense that 'everyone has different roles, yet everyone is equally important'. These days we also see concepts such as design-thinking[41] - in effect, further variants on the auftragstaktik / fingerspitzengefühl loop - formally embedded in military operational-doctrine[42] and the like.

[39] http://www.therightconversation.co.uk/pdfs/The_Rise_Of_Conversational_Leadership.pdf

[40] http://weblog.tetradian.com/rebalancing-topdown-mgmt-architectures/

[41] https://en.wikipedia.org/wiki/Design_thinking

[42] http://weblog.tetradian.com/hybrid-thinking-ea-and-us-army/

Another key element is organisational-culture - whether the culture invites or dissuades individual judgement within real-time action (auftragstaktik), elicitation and capture of real-world subtleties (for fingerspitzengefühl) and/or whistleblower-type algedonic responses[43]. There's a great illustration of this in Atul Gawande's book *The Checklist Manifesto*[44]., about Wal-Mart's response to the Hurricane Katrina disaster in New Orleans. First, there's the autragstaktik side of the loop:

> Briefed on what was developing, the giant discount retailer's chief executive officer, Lee Scott, issued a simple edict. "This company will respond to the level of this disaster", he was remembered to have said in a meeting with his upper management. "A lot of you are going to have to make decisions above your level. Make the best decisions that you can with the information that's available to you at the time, and above all, do the right thing". As one of the officers at the meeting later recalled, "That was it." The edict was passed down to store managers and set the tone for how people were expected to react.

And, more on the fingerspitzengefühl side:

> In other words, to handle this complex situation, [senior Wal-Mart officials] did not issue instructions. Conditions were too unpredictable and constantly changing. They worked on making sure people talked. [...] The team also opened a twenty-four-hour call-center for employees, which started with eight operators, but rapidly expanded to eighty to cope with the load. Along the way, the team discovered that, given common goals to do what they could to help and to coordinate with each

[43] http://weblog.tetradian.com/pervasives-and-the-vsm-algedonic-link/
[44] http://atulgawande.com/book/the-checklist-manifesto/

> other, Wal-Mart's employees were able to fashion some extraordinary solutions.

Again, the crucial point here is that the culture *overtly* supports the auftragstaktik / fingerspitzengefühl loop:

> The assistant manager of a Wal-Mart store engulfed by a thirty-foot storm-surge ran a bulldozer through the store, loaded it with any items she could salvage, and gave them all away in the parking lot. When a local hospital told her it was running short of drugs, she went back in and broke into the store's pharmacy - and was lauded by upper management for it.

Okay, that was in context of a major emergency, and under more 'normal' conditions the response from upper-management would no doubt have been *very* different! Yet executives and senior-managers can also "set the tone" for a more everyday auftragstaktik and fingerspitzengefühl in other ways - particularly by personal example. This is probably best typified by Herb Kelleher[45], former CEO of Southwest Airlines in the US, who apparently spent at least one week of each month working on the front-line, as cabin-crew, on check-in and gate-management, and in baggage-handling. The ways in which ***principles underpin the auftragstaktik / fingerspitzengefühl loop***, to provide deeper guidance in the face of the new or the 'Not-known[46]', are also illustrated well in some of Kelleher's quotes[47]:

> "We have a strategic plan. It's called doing things."
> "When someone comes to me with a cost saving idea, I don't immediately jump up and say yes. I ask: what's

[45] https://en.wikipedia.org/wiki/Herb_Kelleher
[46] http://weblog.tetradian.com/tag/scan/
[47] http://www.logomaker.com/blog/2012/05/21/9-inspirational-quotes-on-business-by-herb-kelleher/

> the effect on the customer?" "If the employees come first, then they're happy. A motivated employee treats the customer well. The customer is happy so they keep coming back, which pleases the shareholders. It's not one of the enduring great mysteries of all time, it is just the way it works." "A company is stronger if it is bound by love rather than by fear."

Another example of exemplifying a cultural principle was Kelleher's method for resolving an inadvertent yet potentially major trademark-dispute. Instead of spending perhaps millions on litigation, he got together with the existing trademark-holder, and between them they turned the whole contest instead into a charity fund-raiser, built around a person-to-person arm-wrestling match - a comedic media-event nicknamed 'Malice in Dallas[48]'. With a ***fingerspitzengefühl awareness of the fine-detail*** of the context, and with a ***principles-based auftragstaktik emphasis on the overall aim*** rather than the specific means to be used to get there, then in complex contexts ***there's always another, better way to achieve the same outcome***: that's really the point to be noted here.

If you want more on this, the link between auftragstaktik and fingerspitzengefühl was a key theme in my slidedeck 'Invisible Armies: information, purpose and the real enterprise[49]', this-year's session for my regular end-of-conference 'Gravesyard Slot' at the Integrated-EA conference[50], back in early March. I forgot to publish the slidedeck on this blog at that time, so here it is, for general delectation, delight or whatever.

Share And Enjoy, perhaps? I hope it's useful, anyway, and over to you for comment, if you wish.

[48] http://www.freibergs.com/books/nuts-southwest-airlines-crazy-recipe-for-business-and-personal-success/excerpts/malice-in-dallas/

[49] http://www.slideshare.net/tetradian/invisible-armies-information-purpose-and-the-real-enterprise

[50] http://www.integrated-ea.com/

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- *Tags*: auftragstaktik, commander's intent, complexity, Enterprise architecture, fingerspitzengehfuhl, fingertip feel, Knowledge, narrative knowledge, organisation, organization, SCAN, story, strategy, structure, tactics

[51] http://weblog.tetradian.com/auftragstaktik-and-fingerspitzengefuhl