

# CONFRONTING WICKED PROBLEMS: and some Planguage Tools to deal with them.

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## Summary:

Some planning problems are more difficult to deal with than others, of course. And some problems require an entirely different and more advanced set of methods to deal with, than for the simpler problems. The extreme category of this challenge is widely called 'Wicked Problems' [1, A1].

In this paper, I will specifically and exclusively explain how my *own* methods ('Planguage', as detailed in my books such as Competitive Engineering (2005) and Value Planning (2016)]. can help deal with Wicked Problems better.

The arguments and explanations below are by *no means exhaustive*. There is usually at least 100 times more practical tools and arguments for each case below. But they are written up in detail in books, and near the VP references given. My point is to show there is *some* concrete argument, and to hint there is a lot more where *they* came from.

## How Planguage Tools Help Whack Wickedness.

### **W1. There is no definitive formulation of a wicked problem. [F2, for explanation]**

Planguage (The Planning Language) does not need or expect a 'definitive formulation' of a problem.

Planguage allows you to specify any set of *problem statements* (value objectives, constraints, assumptions, constrained strategies, budgets, deadlines, stakeholders) that might be useful.

They can all be modified at any time. They can be versioned. They can be officially sanctioned or approved, until further notice. They can be quality controlled. The quality, relevance, correctness and usefulness of any class of problem statement can be gradually enhanced.

Problem statements can easily be integrated with each other, and their relationship to solutions (strategies, designs, architectures) can easily and automatically be mapped and tracked.

Problem statements can be directly and measurably related to emerging value delivery, and costs: giving real time feedback to the planning model.

A rich set of *background* specifications is expected and encouraged for all problem statements. These include such items as issues, assumptions, constraints, sources, evidence, risks, stakeholders, and very much more [VP 2.2, 3.1, 4.2 for detail].

The *background* specification for a problem statement (like an 'objective') does not change the *core problem specification*. But it enables us to sense the larger and more complex relationships involved (for example multiple *risks* and *stakeholders* for every single problem statement).

Background specification triggers and motivates us to analyze deeper and improve our view or model of the problem space.

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Source: VP [8]: Figure 3.1 B. Some common relationship parameters in a Language specification.

Language is well suited to capturing emerging insights about Wicked Problems. It is specifically designed to do so.

### W2. Wicked problems have no stopping rule. [F2]

Language makes no assumptions about stopping a development, or the existence of a 'final state'.

Language assumes that the systems it is planning for, already have a life in the real world, and will continue to have a life for the foreseeable future.

Language is all about high-priority incremental improvement, towards the current long-term objectives, using resources *actually* available.

The Language planning process is merely a tool for keeping track of concerns, and solution ideas.

The tool is used to keep track of the current state of the system, from *any* interesting, and all useful emerging, multiple viewpoints.

Language assumes conflict and change are normal, and natural: and tries to make the best decisions in that light.

The nearest thing we have to '*stopping* rules' (knowing when to quit planning, or investing in change) are *locally formulated* policies, such as:

- Stop when the next cycle of change is not profitable enough (VP 4.7, 5.9).
- Stop when no credible solutions are on the table. (VP 4.9, 4.8, 5.8)
- Stop when planned results have repeatedly not been delivered (VP 4.5).

W E Deming taught me that the Plan Do Study Act cycle (PDSA) was expected to continue, 'as long as there is competition'. We do not think in terms of any 'big stop': just focus on smart prioritization.

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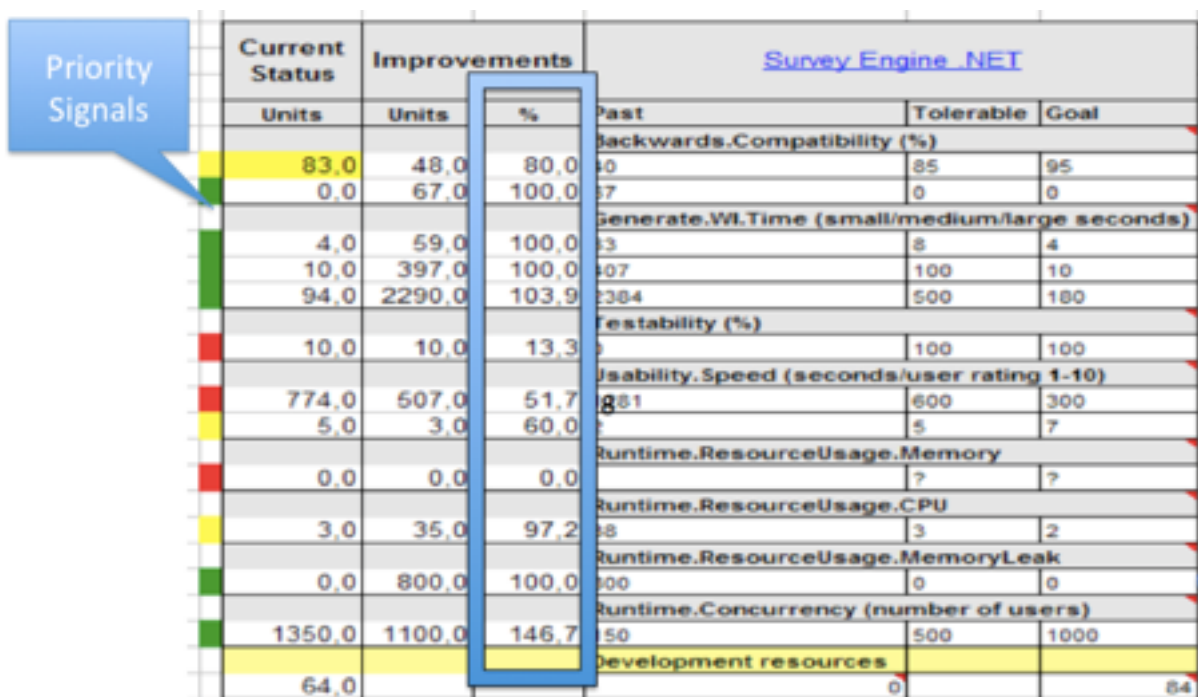
Planguage is unusually *quantified* regarding problem statements (VP Part 1, Chapter 1). All values and qualities are normally quantified. No management BS allowed [10].

So the quantified worst-case levels, and target levels of a desired value, give us a very specific device to know when to stop: when to stop planning, when to stop inventing, when to stop delivering improvements, when to stop and NOT deliver changes at all.

Planguage has a rich variety of tools and specifications for stopping, when that is appropriate. For a rich variety of reasons and conditions. But it has a 'lust for life' to try to keep delivering value to stakeholders. And it makes that possible by quickly stopping low-priority activity. (VP Chapter 6).

Your own culture needs to decide on your own values and priorities regarding when to stop and go.

Planguage has rich built-in specifications that even automatically point out red lights and green lights. Planguage specifications can compute what to prioritize (Green) and what to stop (Red Light). (VP 6.7 )



| Priority Signals | Current Status | Improvements |       | Survey Engine .NET                            |           |      |
|------------------|----------------|--------------|-------|---|-----------|------|
|                  | Units          | Units        | %     | Past  | Tolerable | Goal |
|                  | 83.0           | 48.0         | 80.0  | Backwards.Compatibility (%)                   |           |      |
|                  | 0.0            | 67.0         | 100.0 | 85  | 95        |      |
|                  |                |              |       | 0   | 0         |      |
|                  | 4.0            | 59.0         | 100.0 | Generate.Wt.Time (small/medium/large seconds) |           |      |
|                  | 10.0           | 397.0        | 100.0 | 8   | 4         |      |
|                  | 94.0           | 2290.0       | 103.9 | 107   | 100       | 10   |
|                  |                |              |       | 2384  | 500       | 180  |
|                  | 10.0           | 10.0         | 13.3  | Testability (%)                               |           |      |
|                  |                |              |       | 100   | 100       |      |
|                  | 774.0          | 607.0        | 51.7  | Usability.Speed (seconds/user rating 1-10)    |           |      |
|                  | 5.0            | 3.0          | 60.0  | 881   | 600       | 300  |
|                  |                |              |       | 5   | 7         |      |
|                  | 0.0            | 0.0          | 0.0   | Runtime.ResourceUsage.Memory                  |           |      |
|                  |                |              |       | ?   | ?         |      |
|                  | 3.0            | 35.0         | 97.2  | Runtime.ResourceUsage.CPU                     |           |      |
|                  |                |              |       | 8   | 3         | 2    |
|                  | 0.0            | 800.0        | 100.0 | Runtime.ResourceUsage.MemoryLeak              |           |      |
|                  |                |              |       | 0   | 0         | 0    |
|                  | 1350.0         | 1100.0       | 146.7 | Runtime.Concurrency (number of users)         |           |      |
|                  |                |              |       | 50  | 500       | 1000 |
|                  | 64.0           |              |       | Development resources                         |           |      |
|                  |                |              |       | 0   |           | 64   |

**Figure W2.** Source VP [8] Figure 6.7 . Incremental Value Delivery Tracking at Confirmit (Oslo). This was from 2003. The company used the automatic priority signals to decide when to stop investing more, in any given value, and where to prioritize, and divert, spending their effort, on the next weekly cycle, of product development. After every 12-weekly cycles the results were released worldwide; with extremely competitive business success, to this day. In this particular snapshot, the value delivered, relative to target, after 9 value delivery cycles of the 12-week period, is largely near or better than 100% of target. See Blogs at confirmit.com, still crediting our methods, in 2015!).

### W3. Solutions to wicked problems are not true-or-false, but good-or-bad. [F2]

Planguage has no preconceived notion that solutions are 'correct or good' or not.

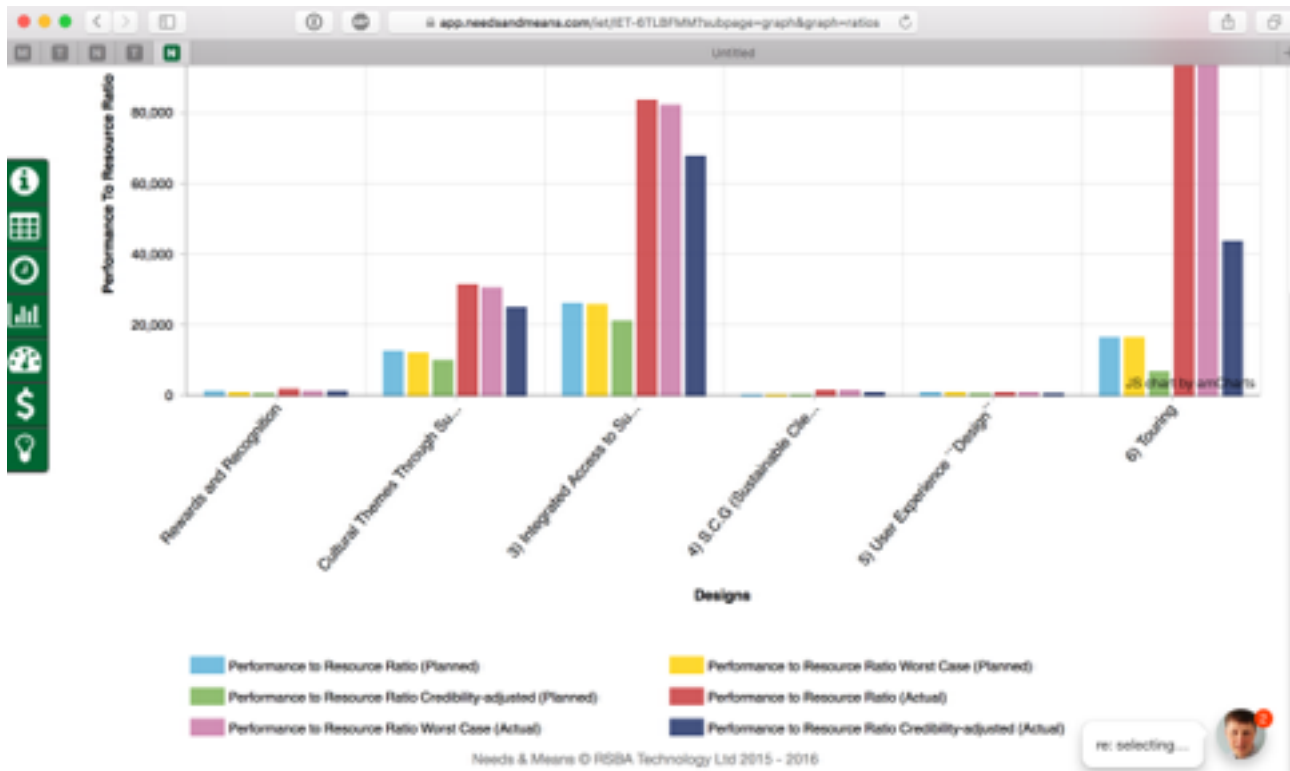
It *explicitly* recognizes that:

- **Problems** (objectives, constraints) are the best currently available subjective stakeholder compromise.
  - Problem specification is subject to constant change pressure.
- **Solutions** (strategies, architecture) are the best available 'hypothesis' as to how to solve a set of problems ('solve' = delivery sufficient [Target level] overall value delivery, within constraints,

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at lowest budgeted resource costs; with regard to risk-of-deviation from expectations (estimates). The degree of solution ‘goodness’ is directly related to the current problem specification.

- The degree of goodness is numerically computed in the Planguage tool ‘Impact Estimation table’ (sample IET in above VP [8] Figure 6.7). This can be supported by automation as in the example below.



**Figure W3:** Real planning example. A ‘bottom line’ summary of the estimated impacts of a set of strategies, where the impact on all top level critical quantified performance objectives is considered. Sometimes with respect to estimated set of budgeted costs. Sometimes with respect to risks with the strategies. Courtesy Incognito Startup Project, Oslo (Gottfried Osei) January 8 2016.

I conclude that Planguage is well suited to this ‘good or bad’ aspect of Wicked Problems.

**W4. There is no immediate and no ultimate test of a solution to a wicked problem. [F2].**

*“we have no way of tracing all the waves  
through all the affected lives ahead of time  
or within a limited time span.”*

[1, Rittel’s main point here, W4]

This problem is not particular for Wicked Problems. It applies to all problems, all efforts, all changes. Butterfly Effect: the sensitive dependence on initial conditions in which a small change in one state of a deterministic nonlinear system can result in large differences in a later state. It is tough to make predictions, especially about the future (Yogi Berra et al).

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In Planguage, using the Project management subset 'Evo' Value Delivery [7], we do in fact measure, in the short term (typically weekly, as in Conformat example above [Figure W2], the impacts on all the critical factors that interest us.

In this Conformat case, we estimate and later measure on a set of critical top level Performance Values, and we estimate and later measure time and effort needed to do the change.[See VP [8] Section 8.6 Getting early short-term feedback.]

Later, for example at quarterly release, additional measurements are made. This takes into account the changes made after the earlier changes. It accounts for the parallel changes made by other teams. It typically is more sophisticated testing and measurement (pre release to world market).

After a release of changes we can *continue* to measure the factors of interest, as they affect real world users of a system. We can certainly expect feedback if they are unhappy!

Finally, in the next round of changes, the critical performance values will *again* be measured, as demonstration that they have held up, or not, over time.

We do not need 'ultimate tests in infinite time'. We need to keep reasonable track of reality in a cost effective manner, and Planguage [Evo] gives us rich numeric opportunity to do so.

All critical problems (of improvement) are always *quantified* in Planguage, or at least 'testable' for presence: that is the basic idea of Planguage.

Reasonable and sufficient measurement and testing is invariably possible.

### **Productivity:**

**Scale:** Average Time for Average Salesperson to Make Sales Activity Report, Daily

**Past:** 60 minutes.

**D1: Goal** [End this Year, New Salespersons] 30 minutes.

**Meter:** Stopwatch by Trainer.

**D2: Goal** [Within 3 Years, Top Salespersons] 15 minutes.

**Meter:** Self Timing reports.

**D3: Goal** [Within 5 Years, All Salesforce] < 5 minutes.

**Meter** [After App is used by everybody] Automated measurement in the reporting app.

**Figure W4.** Source VP Planguage 6.7: here is a simple example of planning a set of Meters. Meters are a process for measuring in practice, along a single defined Scale of measure. The Meter statement is usually a rough outline only. The detailed 'test' planning to be done by others, such as system testers. Notice we are dealing with short term and long term measurements here at the same planning specification.

The dominant planning culture outside of Planguage (simple examples are Balanced Scorecard, Quality Function Deployment, Enterprise Architecture) invariably allows critical factors, even costs, to go un-quantified. There is, immediately, no possibility of testing or measurement in the short-term or long-term. That is the biggest problem that we see: 'Management BS' [10].

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I believe one central reason that 'Wicked Problems' *appear* to be so wicked, is because we have such a *poor culture of quantification* of critical factors. Words and 'poetry' ('state of the art competitiveness', 'end world hunger') substitute for clear thinking and clear problem specification.

This quantification, and background clarification, does not itself, and alone solve the problem central to Wicked problems (the very complex and voluminous nature of real systems).

But lack of quantification of critical system performance problems makes even short-term and real-time understanding of the problem impossible. But that is NOT a Wicked Problem; it is simply our professional incompetence.

We then *falsely* blame our lack-of-understanding on the 'system complexity': when we in fact have *not even taken very basic steps* to clear the fog in front of our faces (to quantify critical variables).

In conclusion:

1. we can normally get immediate and continuous, tests and measurements, of solutions, in relation to clear problem statements, if we want them.
2. we do not need to worry about *unrealistic ideas* like 'ultimate test' of a solution.

'Ultimate tests' would be nice, of course, but they are not necessary, and they are never possible in the real world.

**W5. Every solution to a wicked problem is a "one-shot operation"; because there is no opportunity to learn by trial-and-error, every attempt counts significantly. [F2].**

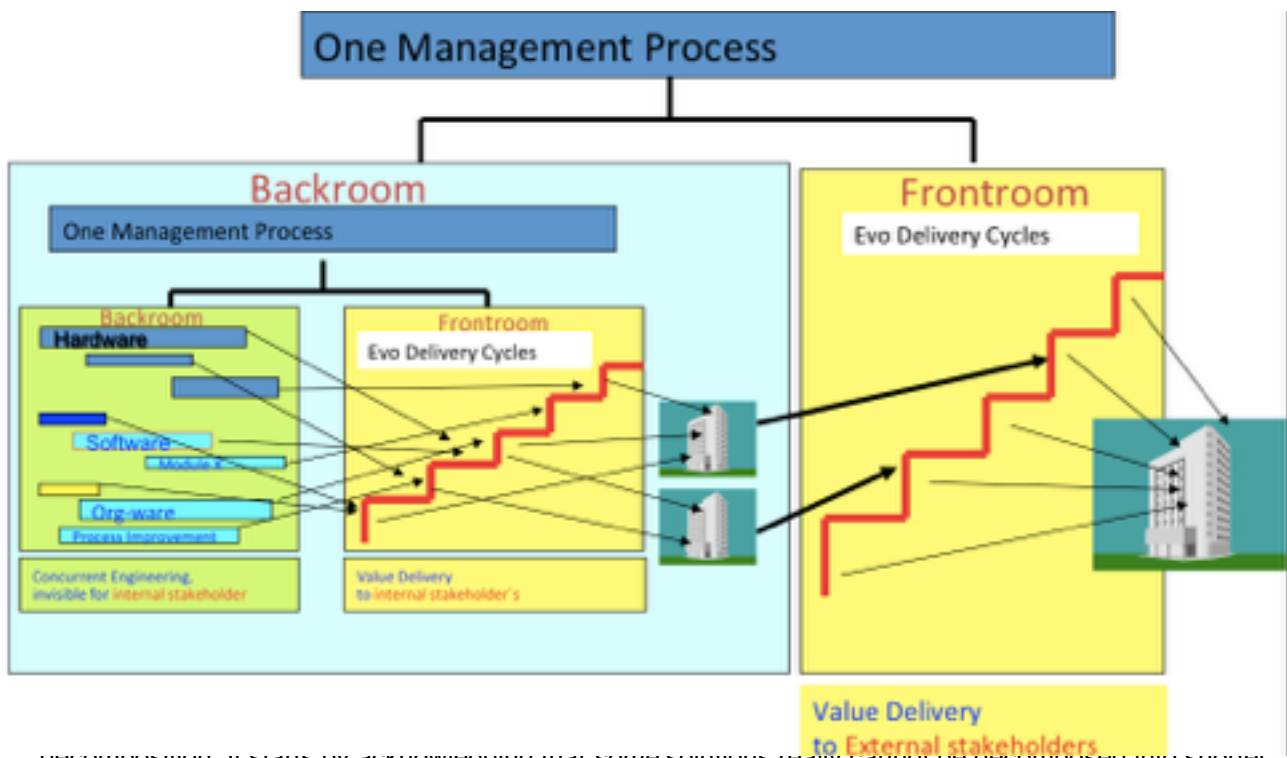
This is another example of a possibly 'artificial' problem which is not inevitably inherent in complex systems. It might be, but another possibility is that the planner has **simply not learned** to decompose 'big strategies' into smaller, deliverable and possibly retractable 'experiments.

I view this widespread inability to decompose big strategies as 'professional incompetence'. The incompetence is caused by lack of knowledge, and training, in decomposition.

Notice that decomposing solutions into simple experimental components is fundamental to both scientific experiment and to engineering. And there are some very big hairy problems they tackle. Think 'Space' and 'Universe'.

Planguage tries to deal with this problem of decomposition, at length, with constructive and teachable methods. [8, Evo. and VP Chapter 5. Decomposition (by value, by responsibility) page 363 to p. 415].

Imagination, intelligence, experience, motivation will allow professionals to figure out how to decompose. I had to learn it by practical experience over decades. But most professionals have not learned such methods explicitly. Half of them are in illogical denial (it 'cannot' be composed). So it is time to teach the methods, rather than hope people will figure it out in a few decades, personally.



decomposition. It starts by acknowledging that *some* solutions really cannot be decomposed into shorter *building* cycles (like a week). They may be dependent on supply-chain delays, externally to our control. But at least we can hide this delay in the 'backroom' until the solution is ready for incremental *delivery*. Then if it does fail, we might be able to extract it, perhaps modify and correct it. But not lose many weeks or months waiting for a bad with negative results.

I conclude that some problems appear more 'Wicked' than they really are, because people are not trained in decomposition methods, which would allow us to avoid the 'every attempt counts significantly' problem.

**W6. Wicked problems do not have an enumerable (or an exhaustively describable) set of potential solutions, nor is there a well-described set of permissible operations that may be incorporated into the plan. [F2]**

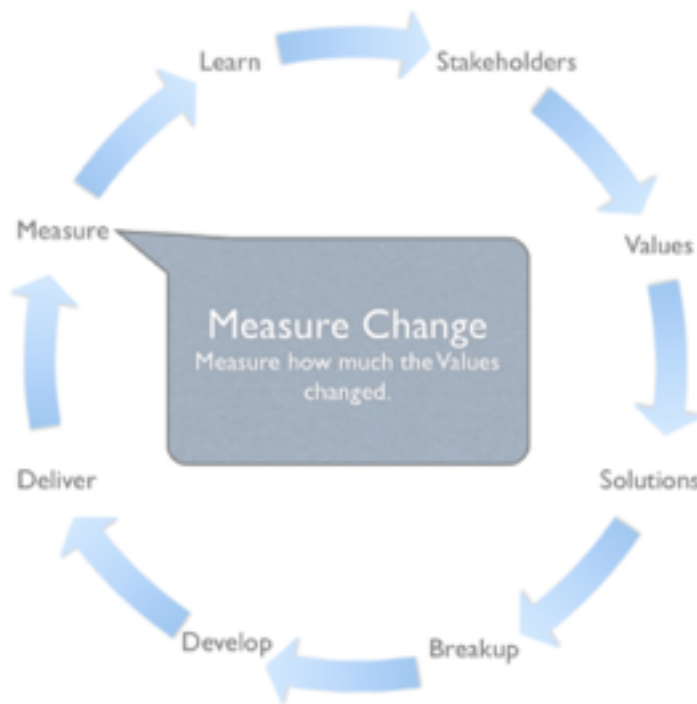
Well, with this point of view, absolutely all real life problems, about people, culture and technology are 'Wicked'. Again this is an *unnecessary* and *unrealistic* expectation ('exhaustively describable') to real world problem solving.

#### **Unrealistic and Unnecessary:**

Even in chess, where the solution space is theoretically exhaustively describable using a computer, there is a time limitation, and even a constraint in real players not using computers in real play. There is too often far too many combinations of play. And this is irrelevant, as long as you either win, or sometimes 'draw'. You do not need all possible solutions, you need a 'pretty good' or 'good enough', **on time**, to meet your deadline (chess clock).

Language as a planning tool has a large number of tools to support this concept of 'good enough, on time'. We will explain a few, as a sample of the toolset.

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**Figure W6.** The Planguage Value Delivery Cycle (Source: Kai Gilb). This is the same principle as the Deming PDSA Cycle. In the current discussion [W6], we develop Solutions to solve our Stakeholder Value problems, and when they do satisfy, according to measurements: we have *enough* solutions. There is *no necessity* to consider the other 99.999%+ solutions at all.

The first concept is what we call a ‘scalar constraint’. It is used in problem formulation. For example “The room temperature must be at least 15 degrees C”. One Planguage term we use is to call this a Tolerable Level of the Value.

So if at least one potential solution, to the temperature problem are estimated to give us ‘at least 15 degrees C’, then the solution is theoretically sufficient. There is not need to look for 1,000+ other possible solutions. This logic is built into the Impact Estimation table in Planguage. And you see it in Figure W4 above. If the level delivered is at or above the Tolerable level, we get a ‘yellow’ light signal. The solution is ‘sufficient’, to meet minimum requirements.

In the next stage of deciding we have enough solutions, we ask in Planguage is the solutions will potentially (later when applied, ‘really reach the target levels) reach our Target levels (a formal numeric definition of success and sufficient problem solving). If any set of solutions will reach our success, sufficiency, levels that there is hotspot is considering the entire solution space exhaustively. That would cost far more than any benefit. it would delay delivery of benefits to the real world in good time. it is silly to even hint that this is ‘necessary’, to exhaust the solution space at all. Can we use common sense here , please?

of course the above explanation is a simplification, to show the principles involved. Even fairly simple (not especially Wicked) problems require us to think about many other factors, when considering if we have explored the solution space sufficiently. For example costs, interaction between solutions, changes in the stakeholder space, poor implementation of otherwise theoretically good solutions, and much more. I can assure you that these factors are all systematically considered, and we have tools for them built into basic Planguage.

See for yourself. VP Part 1 to 5 (50 pages, free book sample [8,]) and really most detailed in the larger books [8, 7]



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I conclude that this 'Enumerable Solutions' Wicked Problem characteristic [W6] is artificial, academic theory, of no practical use in the real world. A waste of time to worry about at all. The real problem is finding sufficient for defined purpose solutions.

**W7. Every wicked problem is essentially unique. [F2]**

### **'Wickedness': needs an improved definition.**

Again, I am getting a bit tired of the fact that these Wickedness characteristics are not especially for 'Wicked' problems. Maybe I need to define 'Wicked' to my *own* satisfaction?

One immediate thought is that 'Wickedness' is *not about the problem itself*. It is the *combination* of 'the problem' and 'the methods-we-know-about; and are willing to use to deal with the problem set'. And maybe, we need to include, some other factors like resources, constraints and motivations.

The essential ideas are that it is about our real-life current *ability to solve the problem*; not about the problem *itself*. Maybe Wicked projects', or '**Wicked processes**' (eternal cycles) better capture what we are dealing with here.

### **Uniqueness is the norm. 'Identity' is an impractical ideal.**

Let us bring in 'obvious common sense' again. Surely absolutely every problem we humans deal with is in some senses unique. So what. Absolutely identical problems are not really very interesting. The implication of W7 is that if the problem were identical, we might know the solution. So what?

Identical problems, that have already been successfully solved, do not guarantee that the solution used is known, or knowable to us - in *time*. An earlier solution may be secret, hidden, undocumented, or even misunderstood (what the real solution was, as opposed to a publicly documented solution).

Anyway, *nothing* is really identical. And we need to find workable solutions if possible anyway. And it does not really matter if there *was* another known solution that worked once. it may be easier for us to just 'get something to work', and move on, than to research, at unknown costs and success of finding it, the 'real solution used in the past by someone'.

Planguage has no such notion as identical problems, and corresponding solutions. Why waste time asking if there is an 'identical problem', anyway. Focus on solving the problem.

Planguage does have well-articulated concepts of asking for *evidence* of past values and costs for any proposed solution [ VP Part 2, 4.4]. The solutions and problems are never identical. We know that. But they do not have to be identical. Just *good enough*.

We are not trying to be identical, but we are trying to improve the probability that we will discover, prioritize, use, and measure - *pretty good* solutions quickly.

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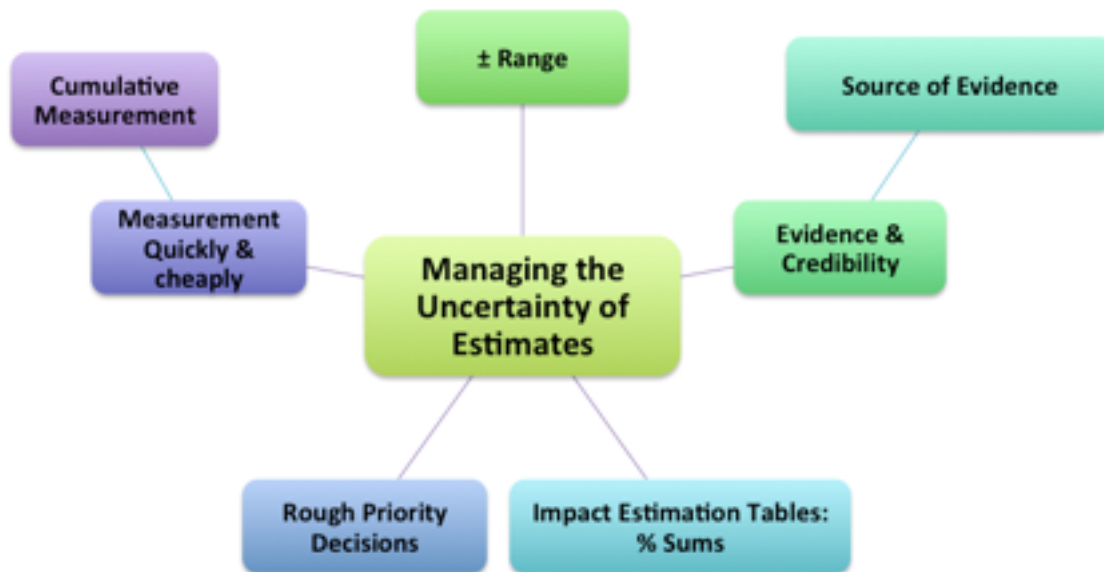


Figure W7. Source: VP Diagram 4.4. Some factors that help us manage the problem of understanding and correcting, our 'estimates of the effects of potential solutions', 'on our objectives and costs'. Planguage uses a range of tactics, *some* are in this diagram, to help us improve the probability that we will quickly find good enough solutions, in spite of the fact that our problem is not identical to any other we know of. One point here is that there is *never* 'one big solution' to 'one big problem'. We are in reality always looking at a big set of simultaneous problems (like at least top ten critical objectives), and trying to find a good enough set of solutions (like at least the top-ten architecture ideas). And that 10x10 relationship matrix (using an Impact Estimation Table [8, 9]) is a high-level simplification of any real problem. With 100 interactions among themselves.

### In conclusion:

'Unique problems' is not a *useful* concept. It is not a clear and useful distinguishing characteristic of a problem. 'Uniqueness of identical problems' is not a helpful concept. We need to focus on finding a solution stream, cumulating to a useful potential set, of solutions: for a problem *stream*, temporary being the current set of *problems*.

### W8. Every wicked problem can be considered to be a symptom of another problem. [F2]

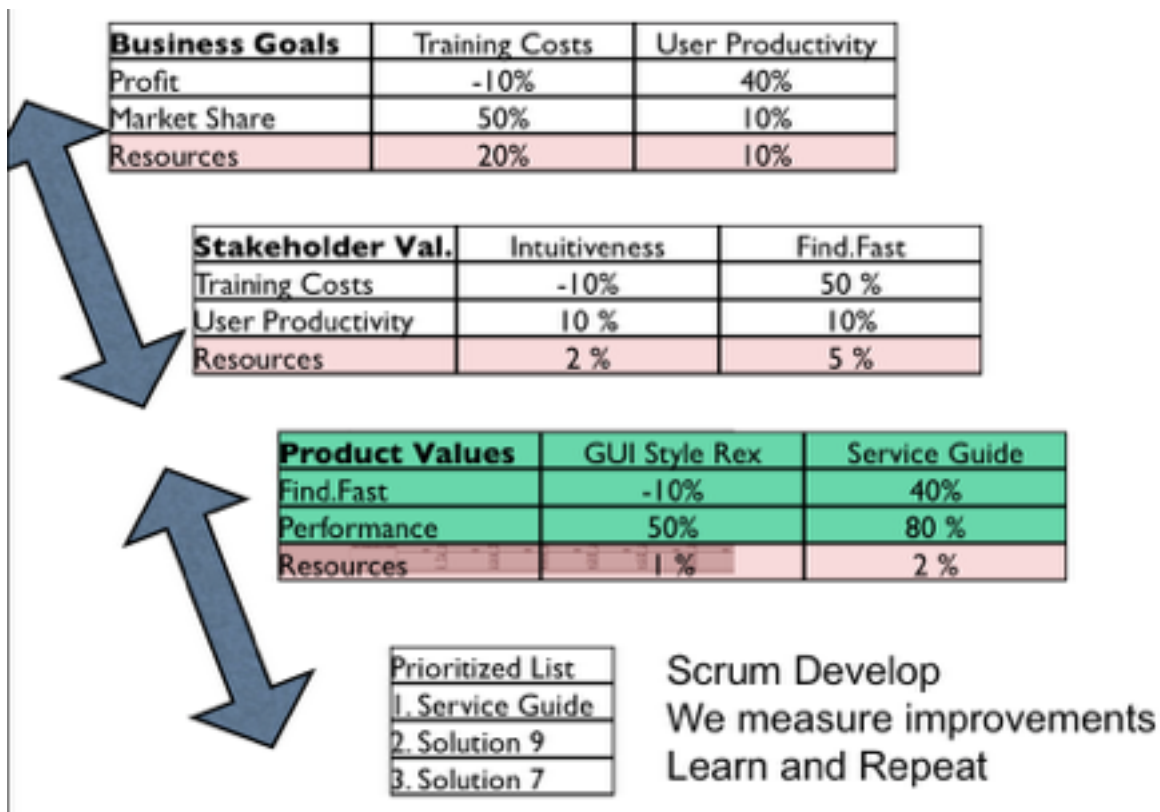
Again, we do not need to bring in 'Wicked' at all. Every problem is a symptom of another problem. That is just the way things are at any level of complexity. My boss' solution becomes *my* problem, and my solution becomes my *teams* problem.

Planguage explicitly acknowledges *many* related levels of concern. Stakeholder levels. Planguage ties these related stakeholder levels *together*, in a variety of ways.

The most interesting method in Planguage is using Impact Estimation tables to model, quantitatively, the relationships between any set of problems: any above, any below, or any sideways stakeholder levels.

One practical application of this was by Kai Gilb at the Transport Company 'Bring' [11].

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**Figure W8.** [11] in order to save a large IT Scrum project that failed initially, (the new system drastically killed sales!). Kai modelled the (obviously, 'it failed') 'wicked system'. He built one Impact Estimation Table (aka Value Decision Table) for the top level of the Bring (Norwegian Post Office essentially) organization. This succeeded to resurrect the system, because it mapped the connection between technology and the higher levels of organizational objectives. The IT Development team was then instructed to focus on developing things that led to business (sales!) success. An extremely *simplified* example is above [For more detail see 11].

**Business Goals:** The top management stakeholder level has problems, like *Increase Profit* and *Market Share*. Solutions have been identified (reduce *Training Costs*, and improve *User Productivity*). The expected, estimated, impact of these solutions on the (elsewhere, see Figure W4 for 'how it looks') *quantified* Problems, is given by the numbers estimated (later 'measured as a result') at their intersection. For example Training Costs reduction, if the solution works as expected, promised to move us 50% of the way towards our Market Share objective (the Problem,

**Stakeholder Value:** These solutions become the the Problem at the next level. The Stakeholder level. Think of these as the 30 or so individual transport companies that had been bought and merged to form Bring. It looks like the Solution named 'Intuitiveness' is estimated to contribute 10% of the progress we need towards the User Productivity problem objective. All objectives are, of course, quantified, elsewhere.

**Product Val.:** At the third level (Product Values), 'Find.Fast' (one of the Stakeholder solutions, is considered an IT System objective (a problem statement).

It looks like 'Service Guide' is a solution that is expected to contribute 40% towards the 'Find.Fast' Problem solution. And 'Service Guide' *also* is expected to contribute 80% towards a Performance problem.

**Scrum Level:** The Service Guide solution will be developed and implemented by the Scrum Team. Hopefully its impact will be approximately as expected, and will impact several levels up towards the Business Goals.

**W9. The existence of a discrepancy in representing a wicked problem can be explained in numerous ways. The choice of explanation determines the nature of the problem's resolution. [F2]**

This is confusingly written up in the literature [1]. Let me try to suggest what it means.

If there is more than one way any people can identify, to solve a problem, that allows you to classify the problem as 'wicked'. The actual choice of solution, to a Wicked Problem is arbitrary, and based on the point of view of the planner. Normal scientific methods of evaluating

In Planguage:

1. any solution that works, delivers value for money, and does not violate any constraints, is 'acceptable'. It does not matter that it is one of many possibilities, or that it is a subjective, comfortable, choice by an arbitrary planner.
2. we are happy to document the points of view (stakeholders, sources), and to analyze their 'credibility'. But, if it is legal and it works, we will use it.
3. there are many notions of 'priority'. This in clouds value for money, cultural power, riskiness, credibility, and pleasing other people. We can make these priority explicit, or documented and accepted. The important thing is to aware of acceptable and official priorities. And to be able to question and change priorities, because of other priorities [12].

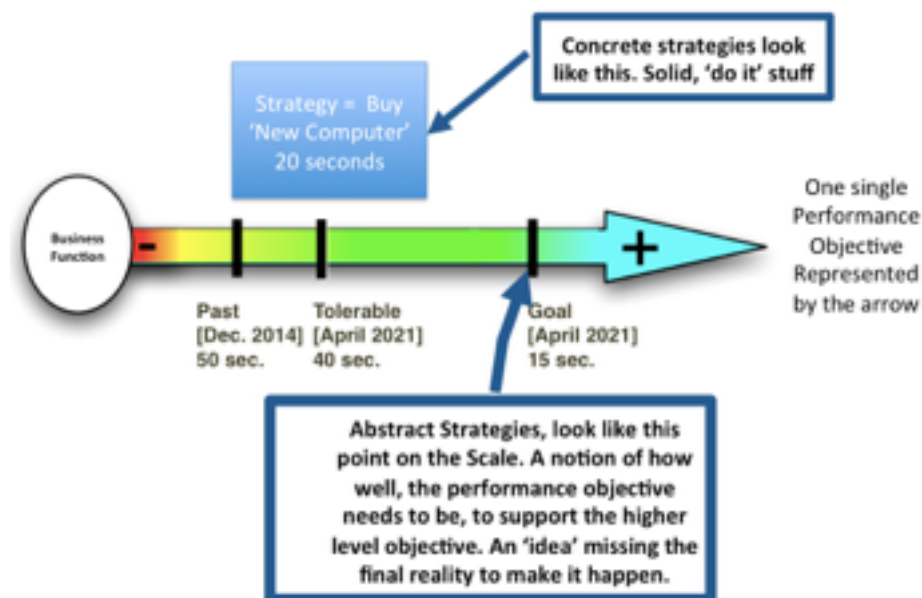


Figure W9. Source VP Part 3, Figure 3F. Strategies are evaluated on the degree to which they are expected to deliver a degree of solution to our defined value improvement problems.

### Conclusion:

This characteristic does not give me any useful insight.

But that could be because I do not understand it yet.

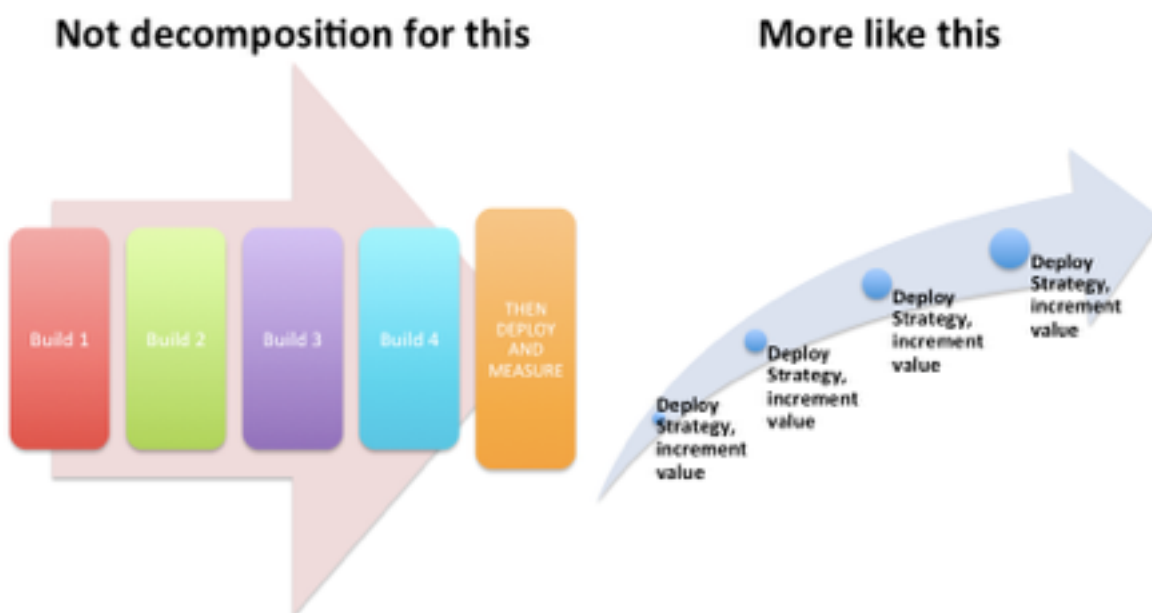
### W10. The planner (designer) has no right to be wrong. [F2]

My interpretation, based on [1].

- A *scientist* can live with a wrong hypothesis, if the refutation process leads to greater knowledge and truth.
- A Planner cannot afford the luxury of this scientific process.
- Planning is not about 'finding the truth'
- Planning is about making thing better for people.
- The planning consequences of a 'bad' hypothesis has real, and possibly very negative, impacts on real people.
- So, planners cannot ethically have 'philosophical fun' with possibly bad hypothesis.
- They have to get their solution (and problem) right enough to do no damage, and hopefully right enough, to do good, for people.

Planguage very much supports this process, do-gooding, rather than truth-finding. It does so in a large number of large-and-small tools, principles, methods, and processes.

One of many examples of this is the primary Evo process of trying to deliver the largest possible stream of value improvement as early and continuously as possible, which learning through feedback how to improve on this process itself.



**Figure W10:** Planguage and its value delivery process 'Evo'. It is not about speculating about big solutions and big problems (left side). It is about pushing stakeholder value out to stakeholders as soon as possible, as fast as possible, and learning how to improve the process of value delivery. Learning to cope with a possibly 'wicked' environment as fast as possible.

## Paper Summary:

I think the 'Wicked Problem' ideas are more misleading than useful.

There are a wide variety of methods for handling large and complicated systems in reasonable ways, in addition to the ones I have presented [5 is constructive], here and in my books.

Most intelligent professionals that I encounter, do not seem trained in these methods, and are not aware of the many tools they can use to tackle complicated ('Wicked') systems.

I think we need to focus our attention on mastering a variety of methods for delivering stakeholder value. We are nowhere near good enough, with extremely high failure rates. Failure rates which should shame any professionals with responsibility and pride.

The conditions telling us that we are good enough, or much better are:

- more than 95% of our projects result in the value improvements we have promised, on time and within budget. We already have the knowledge to do that. Do you ? [F1]
- no excuses about 'Wicked Problems'

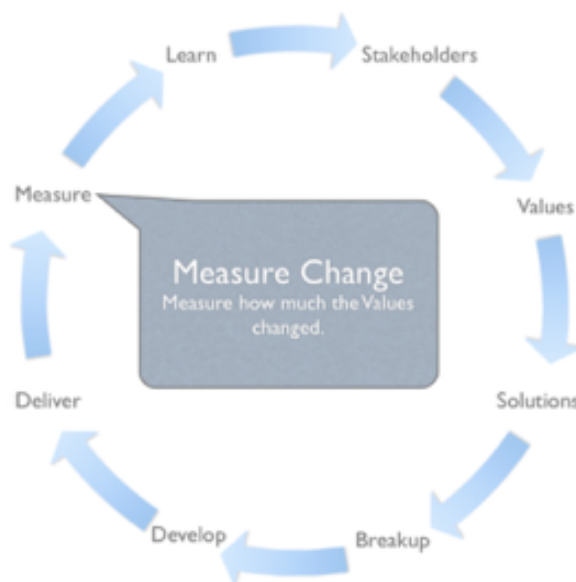


Figure W 11. The Evo Value Delivery Cycle of Planguage. The constant pursuit of value and insight as to how to get more of it for less.

## References:

1. **Dilemmas in a General Theory of Planning**, Rittel, H., and M. Webber;” pp 155-169, Policy Sciences, Vol. 4, Elsevier Scientific Publishing Company, Inc., Amsterdam, 1973. Horst Rittel and Melvin Webber observed that there are a set of problems that cannot be resolved with traditional analytical approaches. They labeled such problems ‘Wicked Problems’.

Professors of design and urban planning at the University of California at Berkeley,

[http://www.uctc.net/mwebber/Rittel+Webber+Dilemmas+General\\_Theory\\_of\\_Planning.pdf](http://www.uctc.net/mwebber/Rittel+Webber+Dilemmas+General_Theory_of_Planning.pdf)

*This is the original and basic paper on Wicked Problems and Issues: all others are just ‘reporting it’. At first I was quite impressed by many deep statements and insights. But as I analyzed the 10 Wicked Characteristics, in this paper, I lost my admiration.*

***”But setting up and constraining the solution space and constructing the measure of performance is the wicked part of the problem.” p. 162***

2. DeGrace, P., and L. H. Stahl. **Wicked Problems, Righteous Solutions.** A Catalogue of Modern Software Engineering Paradigms. **Yourdon Press** Computing Series. **Yourdon Press**, Englewood Cliffs ( 1990) 5.  
[http://www.amazon.co.uk/gp/product/013590126X?keywords=degrace%20and%20stahl&qid=1452522849&ref\\_=sr\\_1\\_1&sr=8-1](http://www.amazon.co.uk/gp/product/013590126X?keywords=degrace%20and%20stahl&qid=1452522849&ref_=sr_1_1&sr=8-1)

3. **Mary Poppendieck, Wicked Problems. Jan. 10, 2002**

<http://www.leanessays.com/2002/01/wicked-problems.html>

4. **Strategy as a Wicked Problem by John C. Camillus**

FROM THE MAY 2008 ISSUE OF HBR

<https://hbr.org/2008/05/strategy-as-a-wicked-problem>

5. **Jeff Conklin**

A. <http://cognexusgroup.com/wp-content/uploads/2013/07/Using-Dialogue-Mapping-to-Address-Wicked-Problems-05-23-2013.pdf>

B. <http://www.cognexus.org/wpf/wickedproblems.pdf>

## Wicked Problems

Chapter 1 sample of his book: “Wicked Problems and Social Complexity”

### 6. Extended Rittel (1930-1990) Publications via Conklin’s book [5B]

Kunz, Werner, and Horst Rittel (1970) “Issues as Elements of Information Systems,” Working Paper 131, The Institute of Urban and Regional Development, University of California, Berkeley, California,

Rittel, Horst (1969) “Reflections on the Scientific and Political Significance of Decision Theory,” Working Paper 115, The Institute of Urban and Regional Development, University of California, Berkeley, California,

Rittel, Horst (1972) “On the Planning Crisis: Systems Analysis of the ‘First and Second Generations’,” *Bedriftsøkonomen*, Nr. 8. Also Reprint No. 107, The Institute of Urban and Regional Development, University of California, Berkeley, California

Rittel, Horst (1972) “Structure and Usefulness of Planning Information Systems,” *Bedriftsøkonomen*, Nr. 8. Also Reprint No. 108, The Institute of Urban and Regional Development, University of California, Berkeley, California

Rittel, Horst and Melvin Webber (1973) “Dilemmas in a General Theory of Planning,” *Policy Sciences* 4,

Elsevier Scientific Publishing, Amsterdam, pp. 155 159. Also Reprint No. 86, The Institute of Urban and Regional Development, University of California, Berkeley, California

Rittel, Horst, and Douglas Noble (1989) “Issue- Based Information Systems for Design,” Working Paper 492, The Institute of Urban and Regional Development, University of California, Berkeley,

### 7. Competitive Engineering (2005): CE

[http://www.amazon.co.uk/Competitive-Engineering-Handbook-Requirements-Planguage-ebook/dp/B000W66C5Y/ref=sr\\_1\\_1?ie=UTF8&qid=1452522999&sr=8-1&keywords=gilb+tom](http://www.amazon.co.uk/Competitive-Engineering-Handbook-Requirements-Planguage-ebook/dp/B000W66C5Y/ref=sr_1_1?ie=UTF8&qid=1452522999&sr=8-1&keywords=gilb+tom)

Chapter 10: Evolutionary Project Management:  
[http://www.gilb.com/tiki-download\\_file.php?fileId=77](http://www.gilb.com/tiki-download_file.php?fileId=77)



8. [VP] Value Planning (2016).

Leanpub.com/ValuePlanning

9. Principles of Software Engineering Management (1988): PoSEM

[http://www.amazon.co.uk/Principles-Software-Engineering-Management-Gilb/dp/0201192462/ref=sr\\_1\\_3?ie=UTF8&qid=1452522999&sr=8-3&keywords=gilb+tom](http://www.amazon.co.uk/Principles-Software-Engineering-Management-Gilb/dp/0201192462/ref=sr_1_3?ie=UTF8&qid=1452522999&sr=8-3&keywords=gilb+tom)

10. On Management BS.

A. Gilb: Quantifying Management Bullshit: forcing IT Stakeholders to reveal the value they really want from your IT Project. <http://www.requirementsnetwork.com/node/2820>

B. RQNG 25 May 2011. Quantifying Management Bull: Forcing IT stakeholders to reveal the value they really want from your IT project. <http://www.requirementsnetwork.com/node/2820>

C. CORE Version, <http://www.gilb.com/dl465>

11. The Bring Case of Quantified Hierarchical Enterprise Modelling

**Bring Case** and more: Hierarchical Impact Estimation Tables

<http://www.gilb.com/dl500>

**"Value-Driven Development: Principles and Values."**

Slides for , 50 minute talk, Software Passion Conference 20 March 2012  
Gothenburg, Sweden

**Value Management  
(Evo)**

**with Scrum development**, March 2010 English Version , Kai Gilb

[www.gilb.com/tiki-download\\_file.php?fileId=277](http://www.gilb.com/tiki-download_file.php?fileId=277)

**The Inmates are running the asylum, Construx Summit talk Oct  
25 2011 Seattle**

**Contains considerable Bring Case slides**

[www.gilb.com/tiki-download\\_file.php?fileId=488](http://www.gilb.com/tiki-download_file.php?fileId=488)

## 12. Priority Papers.

12 A. '**Managing Priority**' by Tom Gilb and Mark Maier

<http://www.gilb.com/dl60>

12 B. **Choice and Priority Using Planguage:**

**A wide variety of specification devices and analytical tools.**

By Tom Gilb

<http://www.gilb.com/dl48>

12 C. Lindsey Brodie, PhD, 2015

Title: "**Impact Estimation: IT Priority Decisions**"

Middlesex University online publications.

The PhD will not be on a public site until about 2017. But it can be obtained by request from [lindseybrodie@btopenworld.com](mailto:lindseybrodie@btopenworld.com)

13. Tom Gilb, "**The Logic of Design: Design Process Principles**".

<http://www.gilb.com/dl857>

## APPENDIX

### A1. Characteristics of Wicked Problems. Tagged W1 to W10.

- W1. There is no definitive formulation of a wicked problem.
- W2. Wicked problems have no stopping rule.
- W3. Solutions to wicked problems are not true-or-false, but good-or-bad.
- W4. There is no immediate and no ultimate test of a solution to a wicked problem.
- W5. Every solution to a wicked problem is a "one-shot operation"; because there is no opportunity to learn by trial-and-error, every attempt counts significantly.
- W6. Wicked problems do not have an enumerable (or an exhaustively describable) set of potential solutions, nor is there a well-described set of permissible operations that may be incorporated into the plan.
- W7. Every wicked problem is essentially unique.
- W8. Every wicked problem can be considered to be a symptom of another problem.
- W9. The existence of a discrepancy in representing a wicked problem can be explained in numerous ways. The choice of explanation determines the nature of the problem's resolution.
- W10. The planner (designer) has no right to be wrong.

For more detail see: [1]

[http://www.uctc.net/mwebber/Rittel+Webber+Dilemmas+General\\_Theory\\_of\\_Planning.pdf](http://www.uctc.net/mwebber/Rittel+Webber+Dilemmas+General_Theory_of_Planning.pdf)

Footnotes:

F1: Methods that actually deliver big systems value on time

See VP **Case Study 7.4 : Cleanroom at IBM Federal Systems Division.**

## **QUINNAN AND MILLS CLEANROOM**

<http://www.gilb.com/dl821>

is contained in these slides.

A. Mills, H. 1980. The management of software engineering: part 1: principles of software engineering. *IBM Systems Journal* 19, issue 4 (Dec.):414-420.

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[http://trace.tennessee.edu/cgi/viewcontent.cgi?article=1004&context=utk\\_harlan](http://trace.tennessee.edu/cgi/viewcontent.cgi?article=1004&context=utk_harlan)

Library header

[http://trace.tennessee.edu/utk\\_harlan/5/](http://trace.tennessee.edu/utk_harlan/5/)

B. Mills, Harlan D.; Dyer, M.; and Linger, R. C., "Cleanroom Software Engineering" (1987). The Harlan D. Mills Collection. [http://](http://trace.tennessee.edu/utk_harlan/18)

[trace.tennessee.edu/utk\\_harlan/18](http://trace.tennessee.edu/utk_harlan/18)

F2: for a better interpretation of these statements, check the reference **Dilemmas in a General Theory of Planning**, where the detailed download is easily accessible [1].

## **ACKNOWLEDGEMENTS**

Thanks to Mike Beedle and then Mary Poppendieck (in her blog of 2002) for making belatedly aware, again, (I had some contact with Conklin earlier it seems) of the Wicked Problems Literature, in January 8 2016.

## **ADMINISTRATIVE**

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