Deal or No Deal?
Getting to grips with the Brexit conundrum
“These damaging effects of the downward spiral into Brexit will only intensify should a “no-deal” exit occur. The immediate imposition, for example, of EU tariffs on British exports, ranging from 4% to 40%, would be massively disruptive. Among the hardest hit would be the car industry, the UK’s fastest-growing exporter of manufactured goods, according to a study by the Centre of European Reform”.

The Observer – Main Editorial October 22nd 2017.

“One of the greatest mistakes that can be made when dealing with a mess is to carve off part of the mess, treat it as a problem and then solve it as a puzzle -- ignoring its links with other aspects of the mess.”

Pidd M. 1996 Tools for Thinking
Executive Summary

In the immediate wake of the Brexit referendum result, prominent Brexiteers postulated that the process to disengage from the EU would be a relatively simple matter. Yet it is increasingly apparent to our negotiators that the process is highly complex and fraught and that the earlier, hoped for, timetable has been delayed to the extent that a situation akin to an “impasse” has been reached with few signs that the log-jam will be unblocked soon.

If our government (and indeed its counterparts in the EU) is struggling to come to terms with this ever-changing situation, how difficult is it for the business community, which is trying to second guess both the UK and EU negotiators, to address such complexity in the face of this uncertainty?

If I told you that, subject to following a number of steps or processes, such problems with potentially vast numbers of permutations (and we are talking of permutations even in the millions) could be majorly reduced to a much smaller set of viable options, (by over 95%) would you be interested? At a minimum, it would filter out, from the myriad of options generated by a myriad of variables contained within the problem, and including negative unintended outcomes. Conversely such a process can help identify real innovative solutions and outcomes that are difficult to come by when faced with such complexity.

About the Author

Dr Bruce Garvey is the CEO and founder of Strategy Foresight Limited (SFL), a specialist technology company dealing with problem structuring for highly complex issues occurring under conditions of uncertainty and complexity. Much of the development work that has gone into SFL’s technology emanated from Bruce’s research within a PhD research programme at Imperial College London. This addressed problem structuring and decision support methods as pertaining to creativity and innovation, technology forecasting, futures, scenario planning and systems uncertainties in the engineering/design and other sectors. Bruce’s specialist knowledge is complemented by over 40 years’ experience in both the major corporate and SME sectors, performing a wide range of roles as a senior business executive including company director (plus non-executive), mentor, advisor and consultant.
What type of problem are you facing?

Problems come in more than one form: Indeed, of three problem types, puzzles, problems and “wicked problems” (or “mess”), the Brexit conundrum is rapidly taking on the characteristics of the third type – “wicked problem” – although the term “mess” might be a better description. A brief explanation of the three problem types show that a “puzzle” is a well-defined and well-structured problem with a specific solution that somebody can work out, such as building a bridge or designing a watch; a problem is an issue that does have a defined form or structure; it is dimensioned; it has variables and we know something about how these variables interact but it does not have any one, single, clear-cut solution. The outcome, albeit not fixed, does have known probabilities. Examples include, computer hacking, management of pricing and costs, plant shutdowns.

A “wicked problem” (aka “mess”) is, highly unstructured and in its purest form, unsolvable. It is characterised as having: Multiple actors and stakeholders, multiple perspectives, incommensurable and/or conflicting interests, numerous intangibles and key uncertainties which are difficult or impossible to solve because of incomplete, contradictory, and dynamic components that are often difficult to recognise (let alone quantify).

Current "wicked" problems are:

- Brexit – hard/soft or not at all?
- How can we pay for the NHS?
- Iraq/Syria – How will the dynamic complexity in the area impact security policy?
- What is the future of human based work?

The issue here is that decision makers find it difficult to accept the highly uncertain nature of wicked-problems, and seek short-term panaceas whereby the interconnecting dynamics of such problems are simplified- such simplification doesn’t do the problem justice.
Structuring the “wicked” problem of Brexit

In this paper, we describe a first level of complexity that characterizes the Brexit process. By first level we mean a “simplified” representation of the salient variables or parameters. Our rationale for adopting this stance is based on the work carried out by Wharton” psychologist Philip Tetlock** whereby, in a 20 year study he determined that the informed amateur was as good as the expert (sometimes more so) in making correct political judgements about future events.


Therefore, to demonstrate the inherent complexity of the core issues we have developed a “straw-man” model as a way to illustrate the wider complex conundrum when faced with numerous layers of uncertainty. We call this structuring the “problem space”.

Our model identifies some 10 main variables (or parameters) which reflect the range of issues raised by the Brexit process.

These are:

• UK trading options with EU
• Implications for UK integrity
• Implications for EU integrity
• Potential risk to EU economic growth
• Other political & economic shocks
• UK Economic Dynamic 1 (employment)
• UK Economic Dynamic 2 (interest rates) next 5 years
• UK Economic Dynamic 3 (currency)
• Time Period
• Additional Domestic Political drivers

In turn each variable is divided into a number of discrete states or options which characterise different dimensions of the variable. In reality both the key variables (parameters) and the options under each variable would be refined by the client and its chief offices, analysts and stakeholders. In our example the key variables and options are shown in the table on page 6–7.
## Brexit problem space

<table>
<thead>
<tr>
<th>UK trading options with EU</th>
<th>Implications for UK integrity</th>
<th>Implications for EU integrity</th>
<th>Potential risk to EU economic growth</th>
<th>Other political &amp; economic shocks</th>
<th>UK Economic Dynamic 1 (employment)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Norwegian model (EEA)</td>
<td>UK remains as single entity</td>
<td>EU remains as 27 member bloc</td>
<td>Domestic political conflicts</td>
<td>Global economy rises</td>
<td>Unemployment decreases</td>
</tr>
<tr>
<td>Hybrid of Swiss model (EFTA) &amp; Turkish model</td>
<td>Special status for Scotland, NI and London?</td>
<td>EU enlarges</td>
<td>Geopolitical instability</td>
<td>Global economy falls</td>
<td>Unemployment increases</td>
</tr>
<tr>
<td>Canadian option (CETA)</td>
<td>Hard border reinstated between NI and Eire</td>
<td>Current consensus compromised (e.g. another country / region leaves, Catalonia issue)</td>
<td>Asset Bubbles</td>
<td>Increasing political and economic uncertainty across globe (e.g. ME, N Korea, S. China Sea, Baltics), commodity prices</td>
<td>Unemployment status quo</td>
</tr>
<tr>
<td>No options accepted by EU i.e. no deal (WTO)</td>
<td>Dissolution of EU</td>
<td>Changes in EU - US trade agreements</td>
<td>Decreasing levels of above</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**UK Economic Dynamic 2** (employment) (interest rates) next 5 yrs

**UK Economic Dynamic 3** (currency)

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Additional Domestic Political drivers</th>
<th>Implication for businesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK interest rates rise between 2-5%</td>
<td>Pound rises &gt; 10%</td>
<td>Less than 2 years</td>
</tr>
<tr>
<td>UK interest rates &gt; 5%</td>
<td>Pound falls &lt;10%</td>
<td>By 2022</td>
</tr>
<tr>
<td>UK interest rates fall</td>
<td>Pound falls 10-20%</td>
<td>By 2025</td>
</tr>
<tr>
<td>UK interest rates remain same</td>
<td>Remains at current level vs. $ &amp; Euro</td>
<td>Never</td>
</tr>
</tbody>
</table>

**Total Problem Space:**

147,456 589,824 2359296

Even with a small number of options/states per variable, (maximum 4), the number of possible permutations (or configurations) is an amazing 590k for 10 variables and 2.35m for 11 variables”.

However, if we wish to explore what this problem space means in terms of your business we have added an 11th variable (Implications for business) with a limited number of outcomes or options (in this case 4), namely:

- Do nothing
- Relocate all operations to an EU member state
- Relocate some operations to an EU member state
- Register company in EEA or EFTA location

The addition of the outcome variable for business may be very commendable but this increases the overall 11 variable problem space to a mind-blowing 2.4 million configurations! The combinatorial explosion created by representing a problem in terms of key variables and discrete options within each variable, soon becomes unmanageable. The problem space as a matrix is fine as a visual representation of the range and scope of the problem - but surely the profligacy of increasing numbers of variables and options make the model unworkable?

What to do?

Without being over-technical - mind maps/ red teaming and similar methods help in formulating the Problem Space.

By deploying process driven software the large number of configurations in a multi-variable problem space (as per our example) can be reduced to a much smaller set of viable options - hence the term “Options Analysis”. Subject to the generation of a thorough and detailed problem space, viable and consistent solutions can be reduced to 5% or less of the original size of the problem space. These viable solutions can be further refined by other hierarchy based methods - secure in the knowledge that at least the options selected work. Indeed, some solutions will identify both good and bad unintended consequences and outcomes.

Unlike our example the key requirement will be for the “client” to ensure that the stakeholder team is as broadly based as possible (i.e. Jacob Rees-Mogg and Anna Soubry on the same team - leave that to the facilitator) as long as they enter the project in good faith. Remember the wide diversity of opinion is part of the problem being “wicked”. Too narrow a stakeholder base creates “group think” which weakens the ability to develop creative thinking.
In our “straw-man” example, the 11 variable model is set up using software, thus (partial array shown):

This tableau represents the “Problem Space” -- and shows the key variables broken down into a number of discrete options or states. In our example the product of the 11 variables and their respective options is a mighty 2,359,296 different configurations!

* Due to the extended number of horizontal variables (parameters) only 4 are shown in the above graphic.

Using an algorithm to filter out incompatible/inconsistent pairs of options we can majorly reduce the number of viable options which can be analysed. In our example, we have identified some 126 different paired-cells as being inconsistent out of a total of 801 paired cells (or 16%).

We now use the software algorithm to compile only those configurations or solutions which are totally consistent across all individual cells within that configuration. The result is that 5038 configurations are identified as fully consistent solutions (i.e. they work) -- this is a remarkable reduction of over 99% from the original problem space (and based on just 16% of the paired cells being deemed inconsistent).

We can now interrogate the solutions to explore various scenarios each with different inputs and outputs. Indeed, such is the size and complexity of the original problem that without this approach it is very unlikely that analysts can identify those workable solutions. Amongst those solutions that do work will be some that the analyst or policy maker had not remotely thought of -- the identification of unintended consequences or solutions not previously considered -- some good, some bad and some both.
Thus, in our version of the model, and according to our opinion, if a businessperson wants to find out what solutions there are if nothing is done (using this driver or option as an input) - the model tells us that there are No solutions!! - partial array shown.

On the other hand if we choose to nominate that some of the first 10 variables can be used as input (in red) the model tells that only two courses of action are able to be undertaken “Relocate some operations to an EU member state” or “Register company in EEA or EFTA location” but these options are conditional upon a certain number of input conditions (in blue - partial array shown).

Alternatively due to another set of inputs (in red) there are some 100 possible solutions (in blue yield the same outcome as in the above selection (fewer than the 156 in the above selection) - partial array shown).

The model tells us that once we have created the Solutions matrix anything can be analysed by treating any cell as an input or an output. This allows analysts to seek out the optimal solutions and answer questions from policy makers such as “what if …..” - the response is immediate and can be seen within the matrix tableau.
What next?

Good question – what we have attempted to demonstrate in this thought piece is that in spite of the real and apparent complexity of the Brexit situation – with all its uncertainty and interconnectivity – methods do exist to help decision makers, (policy makers, analysts, strategy professionals ..and more), make more informed and structured decisions. This can mitigate against “knee jerk” responses to what are, in effect, Wicked Problems.

This approach will not guarantee a right answer for any of the problems being faced, but at least it will mitigate the risks of selecting those options which may have negative outcomes in the short, medium and long term - and if selected without such due diligence, can come back to haunt decision makers in the days, weeks, months, years and decades to come.

It is not the time to “Think different” but to think correctly, so as to “Think differently” - the better interpretation is that, it is better to be approximately right than precisely wrong!

November 1st 2017

About Strategy Foresight Ltd –
Decision Support for the 21st Century

Strategy Foresight Ltd is a technology company that develops decision-support software solutions to help enterprises improve their decision making under conditions of uncertainty and complexity. The technology supports senior leadership tasked with a critical series of difficult-to-quantify, complex and interconnected problems.

The decision-support software platform combines qualitative and quantitative data into a single easy-to-use visually interactive tool. It is used by several major companies in the Life Science, Engineering and Defence sectors, NATO being one of clients. The software-assisted process enables possible alternative developments that are constructed using quantitative data as well as the experience and intuition of experts and stakeholders. Strategy Foresight helps decision makers to confront issues such as:

- How can I handle uncertainty and help mitigate strategic and operational risks?
- How do I get to grips with both internal and external operating environments impacted by high levels of uncertainty and complexity?
- What existential risks should I be aware of?
- How can I generate new viable solutions that will help improve performance?
- How do I keep my organisation agile in a “wicked” world?

The methods and processes Strategy Foresight deploys, a form of “strategic options analysis”, helps structure problems and support decision making, notably when they are complex, “wicked” and inherently contain high levels of uncertainty. It is particularly well suited in assisting decision making when addressing the inherent uncertainties and risks associated with early-stage investment strategy formulation.