

## Understanding the cost of cooperating

In my last article « Is there anything new to learn about armaments cooperation in Europe ? » (*Défense&Industries*, n°2, October 2014), I suggested that White and Lui (2005) had some insights to offer on the costs of cooperation and what follows is an attempt to outline a new conceptual model of the costs incurred when defence cooperation is attempted, based on their work. It provides a way of distinguishing the costs associated with managing cooperation *risk* and cooperation *opportunity* and, though only conceptual at this stage, provides some useful insights into alliance-based cooperation. George E P Box said that ‘all models are wrong but some are useful’. It is hoped that the model which is outlined here, is useful in framing thinking and allowing management effort to be directed more effectively around cooperation. Having outlined the model and focused on in a couple of key points arising from it, the article will conclude with discussing existing shortcomings that need to be tackled.

### Control costs and Cooperation costs

Rational actors, in the minds of neo-classical economists, will only want to do things where the benefits outweigh the costs. Such an overall cost-benefit analysis requires a proper understanding of both benefits and costs, and this paper focuses exclusively on the second element of costs.

It is based largely on White and Lui’s model developed in their 2005 paper which assumes that ‘cost’ equates to the amount of management time and effort required to achieve a successful outcome. This qualitative approach is useful as it allows a broad range of phenomena to be articulated without the burden of quantifying everything. More importantly, it goes to the heart of how decisions are made in resource-constrained organisations. The White and Lui approach then goes on to make a distinction between the two sorts of costs. Firstly there are the costs that are to do with managing the risk of potential opportunism by the other partner(s); they term these ‘control costs’. Then there are costs associated with making the cooperation work – establishing the grounds, objectives and mechanisms for cooperating – which they term ‘cooperation costs’.

The dominant framework used to assess the costs of cooperation has been transactional cost economics which assumes that partners’ efforts are focused on avoiding opportunistic behaviour by their cooperative partner. Williamson (1985) defines opportunism as ‘self-interest seeking with guile’ and close cooperation presents opportunities for any party to obtain their preferred ends to the detriment of the other(s). As a result, both sides need to make a considerable investment both in bargaining the terms and conditions of the relationship, and in administering the relevant safeguards, whatever they may be. These constitute the control costs.

The risk or the expectation of this behaviour by the other partner necessitates a cautious approach by those acting on behalf of their respective administrations which will not normally welcome unwarranted generosity or naivety by its agents. Organisations will therefore put in place processes and governance structures that will provide adequate control : there will duplicated boards, audit arrangements, policy agreements, various forms of legal or pseudo-legal vehicles and joint reporting mechanisms, all over and above that required for a national programme. Given the complexity of multilateral defence agreements and their inherent ‘incompleteness’ (see Hartley:2012) the risk of opportunism will remain and these structures will need to be enduring.

This can, anecdotally, consume up to 90% of the management effort simply because there is a lack of established mutual knowledge and trust at the outset.

### Cooperation costs

Control costs, as White and Lui point out, do not cover all the costs of cooperation because even were there perfect knowledge and trust of the cooperative partner (and hence, zero control costs), there are costs associated with the more positive opportunity seeking (rather than risk avoiding) management activities of establishing cooperative objectives, defining structures and governance, maintaining communication, and making any necessary internal adjustments to align with the cooperative activity. These make up the ‘cooperation costs’.

>>> suite page 2

COOPERATION	Understanding the cost of cooperating	Richard Ford	1
SPATIAL	The challenge of future space systems and services in Europe	Gil Denis, Xavier Pasco Hélène Huby	5
INDUSTRIES	Comprendre le profil des principaux fournisseurs européens d’équipement de défense	Hélène Masson	12
PERFORMANCE	Secteur aéronautique militaire : performances économiques et financières 2014	Patrick van den Ende	15
ALLEMAGNE	Eclairages sur le futur Livre blanc allemand : un exercice sous contraintes	Gaëlle Winter	19
POLOGNE	Pologne : directive MPDS et Offsets, un compromis difficile	Krzysztof Solocho	23
TECHNOLOGIES	Les vulnérabilités d’une gestion de l’eau centrée sur l’offre	Alexandre Taithe	25
OPÉRATION	L’opération <i>Inherent Resolve</i> et son rôle dans l’endiguement de l’Etat islamique	Philippe Gros	27

White and Lui further postulate that the cooperation costs are a function of two factors: the complexity of the cooperative task and the differences between the cooperative partners (inter-partner difference).

White and Lui hypothesise that for a given task, given a choice of partners, companies will tend to choose those that are most like themselves - in terms of culture, intent, ways of working etc – and are, hence, easier to work with. For most defence acquisition cooperation the partner or partners are effectively ‘chosen’ but the degree of difference will influence the cost of making the cooperation successful. Given the size and variety of Acquisition-related tasks undertaken by the respective MoDs, it is reasonable to assume that certain parts of the respective organisations will work better together than others (because of *intra*-organisation variation) even though there are large scale differences between the two national organisations (inter-organisation difference). Given this variability, the term ‘*relational complexity*’ is preferred within this report – it allows for the inter-organisation variation to be accounted for as well as allowing for multilateral approaches to be considered.

**Relational Complexity.** Relational complexity covers a large range of factors that affect the ability of the partner nations’ acquisition systems to work together in a successful cooperation. They include differences in governance, policy, constraints (legal, administrative or political), methodological preferences, standards, supply chain structure and competence. It also includes softer aspects such as cultural differences at national and professional levels, norms and values, harder aspects such as language and geographical location and is complicated by the multiplicity of layers that need to engage around a cooperation.

**Task Complexity.** Task complexity is a measure of how difficult, in management terms, a chosen joint task or activity is. There are a wide range of factors that will increase the complexity some of which relate to the task itself (such as the degree of technical challenge) and some that relate to the complexity of achieving cooperation on that task (such as misaligned requirements or timescales). Large scale, highly technical development programmes with their enormous budgetary, industrial and political implications are at the extreme end of complexity but, somewhat perversely, tend to be the traditional fare of cooperation because they are unaffordable unilaterally. However, it can be equally difficult to do something less technically and financially ambitious, if there need to be compromises over requirements, reconciliation of timescales, resolution of industrial rivalries or where there is related export competition between partners.

The matter of converging on a joint definition of cooperation objectives or requirements can be hugely costly and, paradoxically, appears easier when the technical requirement is more challenging: room for arbitrariness in requirements appears difficult to manage. This may explain in part why cooperation on armoured fighting vehicles proves less successful than those on complex aerospace platforms. Projects that require exchange of more sensitive information or have politically sensitive consequences will require more management time as will those with wider,

long term strategic consequences. Within a capability-delivery framework including major capital assets and long development timescales, the degree of timescale alignment and its stability over time can most often be the determinant of success or failure; the cost of realigning timescales to converge usually proving too costly.

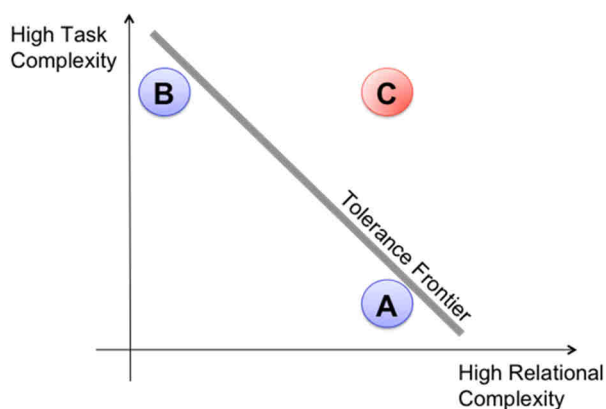
Other psychological factors can add to complexity of the cooperative task. For example, where cooperation is imposed at a late stage this involves abandoning the considerable emotional and intellectual capital that has been invested into the projects by the two national teams. Endowment theory would suggest that the cooperative offering would have to give at least 2 times the return for stakeholders to willingly shift to a cooperative approach. Hence the reluctance often observed in early cooperative engagements; what a senior French official referred to as the ‘mourning period’.

Whilst minimising task complexity is a tempting solution it will reduce the benefits achievable and there is also a threshold of benefit, below which it makes little sense to cooperate because the effective baseline entry cost of cooperating, makes it unattractive. Small cooperations – at least in isolation – are not beautiful.

### Tolerance Frontiers

White and Lui hypothesise that if task complexity and inter-partner difference are plotted against one another there are tolerance frontiers that reflect the fact that complex tasks can only be undertaken by similar partners. Conversely, where the partners are very different, only less complex joint tasks can successfully be attempted. This is illustrated in Figure 1. For opportunity A, because of high relational complexity, only a low complexity task can be tolerated. By contrast, point B represents a high complexity task that can only be tolerably attempted because relational complexity is low. Point C represents an attempt to do a high complexity task with high relational complexity which is beyond the tolerance frontier and will, in all likelihood, fail.

Figure 1. Modified White and Lui Tolerance curves



The box provides a short worked example illustrating the interplay between task and relational complexity using the example of European attempts at Frigate cooperation. It does not claim to be a definitive explanation of what happened by illustrates the principles of the model.

**Applying the Model - Managing Cooperation Costs**

If there is a strategic intent within an alliance to increase the overall benefit from a portfolio of cooperative activities, it will require more successful cooperation of increasing sophistication. Using the Tolerance Frontiers model, there

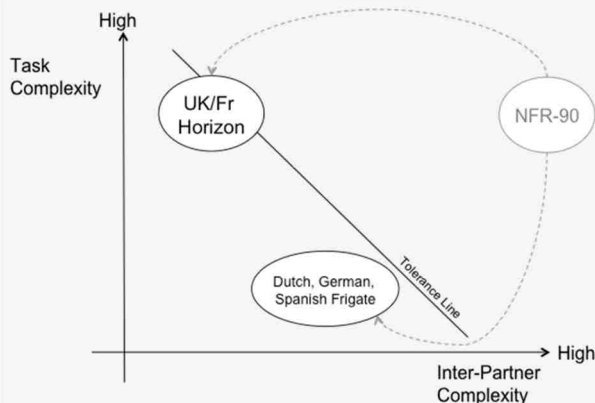
**CASE STUDY: THE EUROPEAN FRIGATE AND TOLERANCE CURVES**

This short case study illustrates the application of the tolerance curves proposed by White and Lui (White & Lui:2005; White:2005) when evaluating task complexity and relational complexity.

The example taken is the European attempts at Frigate cooperation from the 1980s through to the late 1990s. Figure 1 shows the initial intention of a 6-nation, European Frigate, done under the NFR 90 programme. This represents a high (inconceivably high) degree of inter-partner complexity (6 nations represent 15 separate relationships!) and a phenomenally ambitious task - not simply technically, but managerially, industrially and commercially.

The inevitable breakup of the project led to two divergent approaches. The Dutch, German and Spanish adopted a 'opt in' cooperation that was far less complex in nature and therefore tolerable as a 3-nation cooperation. Whilst more effective as a project, it was by its nature, not going to be highly beneficial in terms of cost savings, industrial consolidation, technology development or enhanced military capability. The UK and France, rather than simplifying the task, reduced the cooperation to a bilateral one, Horizon, making it tolerable (just) as shown on the diagram.

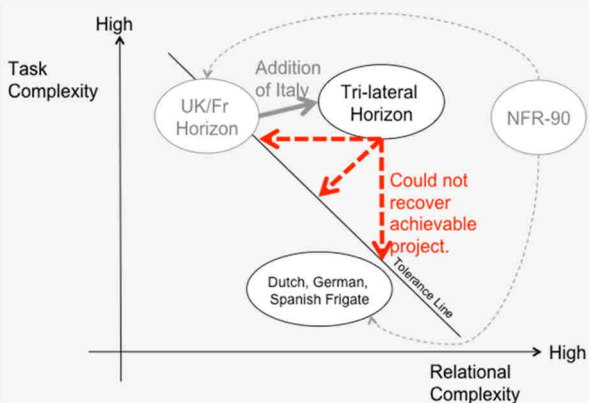
Figure 2. European Frigate Illustration Step 1



The next stage shows Italy joining the UK/French bilateral Horizon programme which increased the relational complexity to the point where it was no longer tolerable/feasible. Since neither the UK nor France wanted to reduce the level of technical and managerial complexity inherent in the task (eg by moving to an 'opt in' approach), it was not possible for the cooperation to continue.

As one lessons learnt report suggested 'the degree of commonality sought on the warship was too ambitious for the current state of political and industrial integration in Europe'.

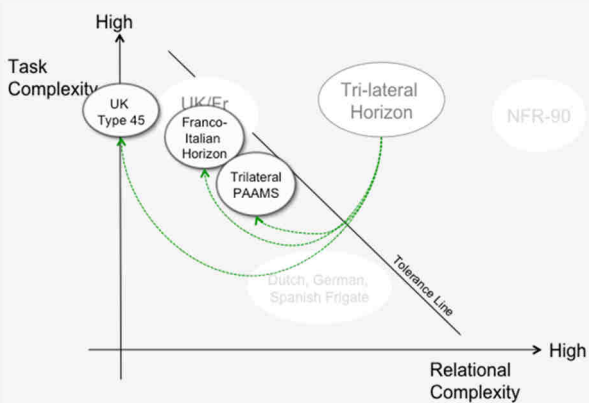
Figure 3. European Frigate Illustration Step 2



This led to the break up of the Tri-lateral programme and a reversion to 3 separate programmes. Firstly the principal weapons system, PAAMS, continued on a tri-lateral basis but this already had elements of 'opt in' built into it, with the UK selecting its radar and fire control system, and only sharing the missile and launcher. This significantly reduced the complexity of the task, at the cost of efficiency.

The UK reverted to a national programme for the frigate (Type 45), thereby eliminating the relational complexity and allowing a full specification project to proceed. The French and Italians continued with a bilateral approach on Horizon, reducing the relational complexity to a point where cooperation was tolerable. All three programmes were successfully completed.

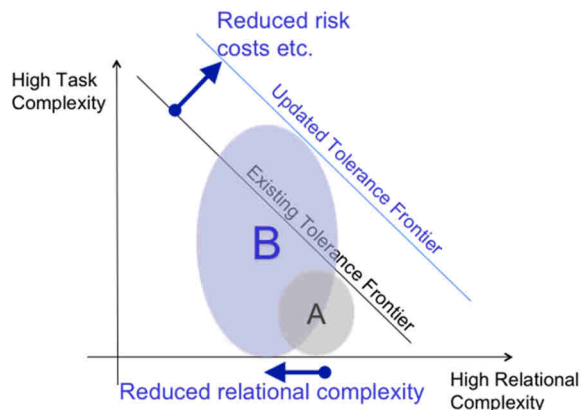
Figure 4. European Frigate Illustration Step 3



are two options available to senior managers to reduce costs: reducing the relational complexity around the cooperation and/or increasing the tolerance frontier.

This is illustrated in Figure 5: area A shows the original space available for effective cooperation within an alliance and area B shows the expanded space once the tolerance frontier is broadened and the relational complexity is reduced.

Figure 5. Strategic Objectives for a Cooperative Alliance



There are obviously pros and cons associated with any of these mechanisms but any change will involve its own management costs to achieve the reduced cooperation costs across a portfolio of cooperative activities. This makes the adoption of a strategic approach unavoidable.

### Widening the Tolerance Frontier

The tolerance frontiers can be widened with more money: states are more willing to accept risk and to be ambitious when the consequences of failure are not too painful. In a period of austerity there is the opposite problem: tight budgets mean that organisations, paradoxically, find it hardest to cooperate when they most need to do so. As one colleague put it, “when the going gets tough, the tough get functional”: their behaviours reverting to tried and tested (normally national) methods, not higher risk strategies such as cooperation.

Beyond reverting to over-optimism, which distorts the perception of the tolerance frontier outwards, the only remaining option is to invest in *trust*. Increased trust and mutual knowledge allows partners to accept greater task complexity. Greater resource can be deployed managing cooperation costs because control costs are reduced and mutual autonomy can be used, with each side acting within their own national management framework.

Investing in trust is not an appeal to a utopian idealism – it involves taking seriously the intangible assets that are embedded in individual and organisational relationships, the need to invest in personal relationships and the hard grind of transparency and openness on the hard topics of motivations, plans, strategy, positioning, behaviours, norms and values. It is notable that the level of information required by Toyota of its US suppliers exceeded that required internally between their own divisions – only that level of information allowed sufficient trust to operate

effectively (see Dyer:1997). Once trust starts to take root, there is a shift from the predominant use of (inefficient) formal mechanisms towards predominantly (efficient) informal mechanisms.

The issue of trust – how it can be developed and sustained, its link to the issues of equity and the effectiveness of alternative, non-trust based strategies – needs more consideration than is possible here. What is clear is that investing in trust is not cheap. Huxham and Vangen (2004) suggest that “for those who want to make collaboration work ... the nurturing process must be continuous and permanent. No sooner will gains be made than a disturbance, in the form of a change to one of the partners, will shatter many of them”.

### Model Shortcomings

This article only gives an overview of the conceptual model and its principles: the full details of the emerging model require a book and validation against real-world cooperation – both the subject of planned future work and research.

The identification of the two cost types (control and cooperation costs), gives a useful distinction for the application of management analysis and action; giving a due emphasis on intangible assets such as trust that are the usual determinant of success or failure but have not been given sufficient focus in previous analysis of cooperation.

In its current form the tolerance frontier models offers a useable framework to structure thinking on moderating levels of ambition and creating the space required for broader and deeper cooperation; something desperately needed if cooperation is to be of more than marginal strategic value. It risks being only good in hindsight and further work is needed so the model can be a useable management tool able to roughly predict where the tolerance frontier lies on proposed future cooperative activities.

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*The views represented in the article are those of the author only*

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