Outdated Capabilities?

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Gen. George Marshall, who in 1939 became Army chief of staff, asked a two-star general in the horse cavalry how he planned to adapt to the challenges of tanks and planes. The two-star, who replied that the horses should be carried to the front in trailers so they would arrive rested, was retired in 1942.

Developing and maintaining capabilities is at the core of a military organization. It is an exercise in finding the balance between the political guidance, the available resources and the need to maintain the correct and broad spectrum of sufficient capabilities. Mistakes do not only mean a waste of money, but the possibility to lose the next conflict or war. Stakes being high, most players are defensive.

Although capabilities are a combination of the lines of development (LoD), known by the acronym DOTMLPFI, the material line seems in most cases the one that determines the whole set. Normally we speak about ships, tanks, aircrafts … and less about what they stand for 'projecting power, maneuverability, flexibility…' If not the most important one, the material LoD most often determines the timeline to acquire the capability. So, although we agree that capability is more than hardware, we keep on talking 'material' accepting the risk to unduly focusing on that one LoD. I will accept that risk too, as it is much easier to explain the issue of outdated capabilities using hardware than using intangibles like doctrine, education & training … But the success of the Blitzkrieg may serve as a reminder that hardware isn't necessarily the essence of a capability.

The development and maintenance of capabilities constitute a life cycle with a number of phases, depending on the approach, like: identification, development, implementation, and management (see Figure 1). The first transitions between the different phases are well defined. Much less so for the last one, the end of life. The abovementioned phases do not even reflect a phasing out as if a capability loses all value in a blink of an eye. This may be because determining the moment to phase out is much harder than the decision to acquire it and the consequences of a wrong call may be disastrous. In hindsight it may look obvious, but not at the moment of truth.
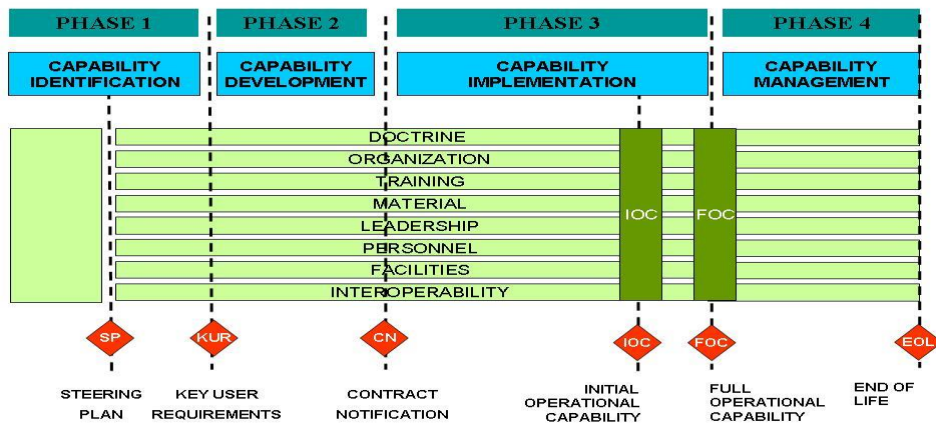
Figure 1: Phases of the Life Cycle of a Capability

However hard it may be, it must be done because maintaining an outdated capability gives one a false feeling of safety while spending money needed to be really secure. Once a capability is considered outdated, one should ventilate the freed-up money towards the development of worthy capabilities. So, it isn't sufficient to know which capabilities are the right candidates to get rid off, but also the ones that are promising to be developed.

Another way to look at this issue is through the lens of evolving requirements. When we consider the changing requirements in time, we should get something like the simplified graphic of Figure 2. The moment – I used a theoretical step function visualized by the red line - we acquire the capability satisfying the correctly defined set of requirements we should have created a superiority gap in relation to our adversaries (in Figure 2 illustrated by the red line jumping to the dotted line representing the level of requirements we wanted the capability to staisfy). Our adversaries in turn will do almost anything to deprive us from that advantage and, providing we do nothing to counter that, they will succeed. From that moment on, when we stick to simply maintaining our capability, they are in a position to acquire superiority, or from our point of view, to widen the inferiority gap. Investing money after the useful lifespan is reached, is clearly a waste.
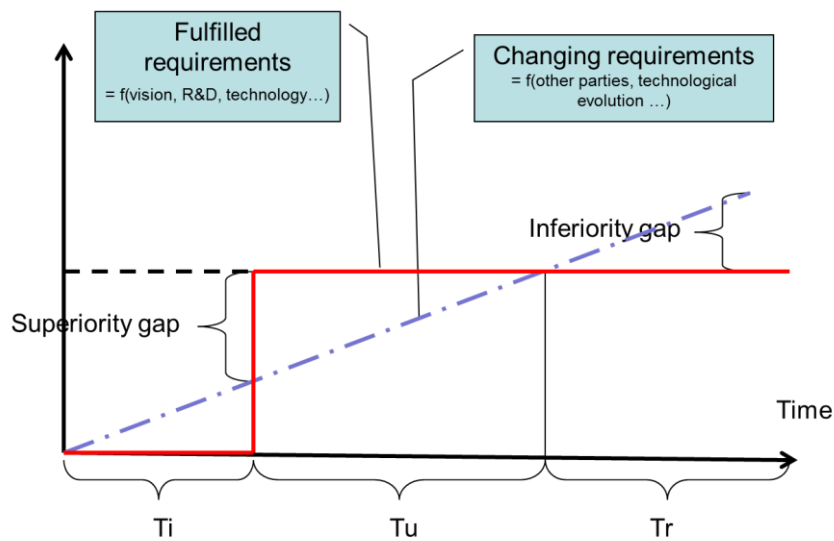
Figure 2: Evolving Requirements

Maybe we can learn a few things from the civilians about how to decide when a capability is outdated? Managing capabilities is a bit like portfolio management in the world of business. When a firm has multiple strategic business units, it must decide what the objectives and strategies for each business are and how to allocate resources among them. A group of businesses can be considered as a portfolio of business units owned by a single firm. In order to evaluate each business, companies sometimes utilize what's called a portfolio planning approach. Such an approach involves analyzing a firm's entire collection of businesses relative to one another. The Boston Consulting Group (BCG) matrix is a widely used approach (see Figure 3).

The BCG matrix helps companies evaluate each of its Strategic Business Units (SBU) based on two factors: (1) the SBU's market growth rate (i.e., how fast the unit is growing compared to the industry in which it competes) and (2) the SBU's relative market share (i.e., how the unit's share of the market compares to the market share of its competitors). Because the BCG matrix assumes that profitability and market share are highly related, it is a useful approach for making business and investment decisions. However, the BCG matrix is subjective and managers should also use their judgment and other planning approaches before making decisions. Businesses of products are classified as stars, cash cows, question marks (problem children), or dogs:

- **Stars:** Everyone wants to be a star. A star is a product with high growth and a high market share. To maintain the growth of their star products, a company may have to invest money to improve them and how they are distributed as well as promote them.
- **Cash Cows:** A cash cow is a product with low growth and a high market share. Cash cows have a large share of a shrinking market. Although they generate a lot of cash, they do not have a long-term future.
- **Question Marks or Problem Children:** Did you ever hear an adult say they didn't know what to do with a child? The same question or problem arises when a product has a low share of a

high-growth market. Managers classify these products as question marks or problem children. They must decide whether to invest in them and hope they become stars or gradually eliminate or sell them.

- **Dogs:** In business, it is not good to be considered a dog. A dog is a product with low growth and low market share. Dogs do not make much money and do not have a promising future. Companies often get rid of dogs. However, some companies are hesitant to classify any of their products as dogs. As a result, they keep producing products and services they shouldn't or invest in dogs in hopes they'll succeed.
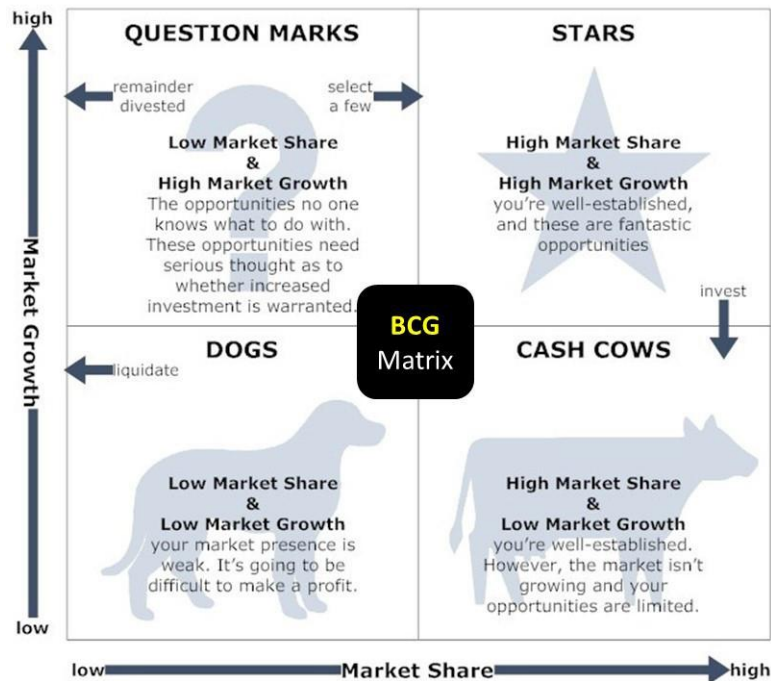

Figure 3: The Boston Consulting Group (BCG) matrix

As we don't worry about market share, nor market growth, how should we translate this matrix into a useful tool for the military? The x-axe, 'Market Share', expresses how strong a business is in its field. The higher the market share, the more difficult it is for the competitors to get the upper hand, although a change in approach may cause a sudden shift. As military this is comparable to 'the available quantity of a capability'. The word 'quantity' must be interpreted in a broad sense as it is more about the amplitude of the effect than about mere volume. The y-axe, 'Market Growth', is about the potential of a business unit to growth. For the military this means how big is the 'potential superiority gap of a capability'. This results in the matrix of Figure 4.
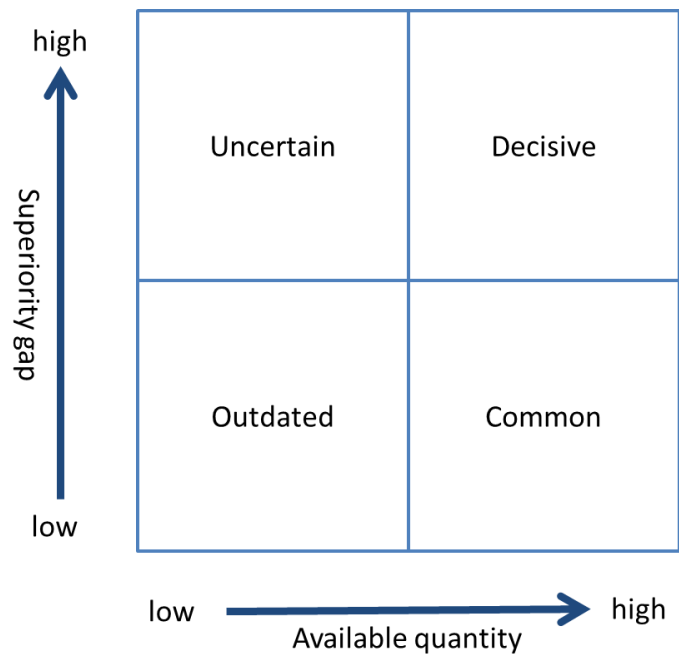
Figure 4: The Military Capability Matrix

These two axes divide the field of capabilities into 4 segments:

- **Decisive** capabilities are capabilities that are readily available in sufficient volume and superior in regard to those of the other side. Armed forces are looking for capabilities in this segment as they (might) provide a long term security. The problem is that these kinds of capabilities are mostly (very) expensive and take a long time to perfect. Examples are aircraft carriers, 5th generation fighters …
- **Common** capabilities are those that are readily available for almost all sides. There is nothing special about it. Although common you have to possess some volume of it, because the side that has none (or too few) may be in trouble. Examples may be main battle tanks, artillery, infantry …
- **Uncertain** capabilities are potentially superior, but not available (yet) in big enough quantity to have a major impact on the battlefield. The real effect may not yet be known because a premature use may backlash. Examples of these are the untested, disastrous use in 1864 of an underground explosion to breach the Confederate defenses of Petersburg, Virginia, also known as the Battle of the Crater; the HMS *Dreadnought*'s entry into service in 1906 represented such an advance in naval technology that she made a whole generation of ships obsolete and made the British Navy lose its superiority overnight because other nations could easily copy the concept (the effect of losing an advantageous position due to the introduction of an radically new capability is sometimes referred to as a 'dreadnought' event); the first exploratory use of mustard gas (Yperite) in 1917 by the German army against British and Canadian soldiers near Ypres, Belgium, …
- **Outdated** capabilities don't provide any superiority and may even be inferior to the other side's capabilities. These capabilities use resources without added value. Examples are the horse cavalry when tanks matured, sail when steam was introduced in warships …

The superiority gap of a capability should be assessed not only against similar capabilities but also against counter capabilities. The superiority of an aircraft carrier should not only be measured against other force projection capabilities, but also against the performance of capabilities to deny the use of carriers. The introduction of the Minié ball greatly increased the accuracy and range of the rifle temporary reducing the effectiveness of the artillery capability used the Napoleontic way, while the implementation of the torpedo rendered the heavy-gun battleship vulnerable. The former capability was able to overcome the counter capability by rifling the guns, while the latter didn't find a counter measure and disappeared in the long run. Will hypersonic anti-carrier missile make carriers obsolete?

The above grid provides a first attempt for a theoretical model to assess the value of a capability. Like with the BCG matrix, this method is not completely objective and prone to mistakes. It is also not perfect, but it is a start to think about capabilities.

Of course, it is easy to fall in the trap of talking 'material' while we should think one level above. In November 2001 a photo of the "horse soldiers" of Afghanistan made its way to the media. In an age where mechanical horsepower had long dominated the battlefield, and hi-tech drones and smart bombs had become the norm, this seemed like a revival of the cavalry. The last time American soldiers had gone into battle on horseback was a cavalry charge against the Japanese in Manila in 1942. But was the cavalry really back? No, the horses where not used for reconnaissance and the provision of security in close operations, but as a capability for light transportation adapted to the local environment. The soldiers were operating in a country where horses were still widely used and, in some terrain, were more useful than mechanized transport.