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**Advances in Defence Analysis,
Concept Development
and Experimentation:**

Innovation for the Future



Edited by:

Bianca Barbu

David Martin

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undertaken a role as an embedded operational analyst within an operational corps headquarters.

Wouter van der Wiel is currently Programme Manager and CD&E Technology Lead at TNO, the Netherlands' leading research and development institute. He completed his study in aerospace engineering in 1998. His involvement in experimentation and CD&E includes over 15 years of working alongside military operators in exercises and CD&E environments. These projects included the Joint Project Optic Windmill (JPOW) series of missile defence exercises (including the NATO-Russian Federation CPX), integration tests with the NATO Active Layered Theatre Ballistic Missile Defence (ALTBMD) test bed, participating in TeamSAIC while stationed at NC3A, and CD&E events in the nine-nation Maritime Theatre Missile Defence (MTMD) Forum. Working in these international projects, he recognized the value of CD&E and became a strong supporter of the method.

Patrick Van Hoerlande works at the NATO desk of the Belgian Defence Staff. In his military career he was and is active on a wide variety of topics including maintenance management, education and training, logistics, strategic management, and concept development. He participated in military operations and humanitarian missions and did a tour in Kosovo as part of NATO's KFOR. He holds an M.Eng. from the Belgian Koninklijke Militaire Academie and an MBA from Newport University. Next to short pieces on specific topics, he has published articles on a wide variety of defence related subjects in specialized magazines like the *Ingenieursblad* and the *Militair Tijdschrift*.

Concept Development Success by Cultivating Chaos

Patrick Van Hoesserlande

Abstract

A few years after the turn of the millennium, the Belgian Defence explored the idea of using the concept of a capability in its strategic thinking. In 2007, after some trial and error, a method was published in two strategic-level directives. The Belgian approach to concept and capability development as captured in both directives was certainly not rocket science, it was quite simple. Not for the lack of support, the process never reached full potential. The article tries to find an answer why it did not work.

Designing the process and later complicating it was easy, but changing the culture to support it proved much harder. Or was never fully understood. The failed application of concept development demonstrates that for its successful implementation you need a new culture. Without this change, the elaborated development process will run idle.

Introduction

Looking back at years of developing concepts, the business seems hard and complex. For some odd reason, we tend to believe that making concept and capability development processes more complex with more decision points and more working groups will make them more performant. Yes, it increases the flow of documents and the number of people involved, giving the impression of more control, but it rarely improves the success rate or commitment. Is there another way?

A few years after the turn of the millennium, the Belgian Defence explored the idea of using the concept of a capability in its strategic thinking. This approach was a direct consequence of the

transformation wave started in the USA that swept across the European continent. It defined a capability as “a structured and coherent set of human, material and immaterial means whose aim is to obtain an effect, i.e. a physical and/or behavioural change in the state of a system”¹. This was a definition much in line with what was used throughout the Alliance. But being able to define a capability does not mean you are able to develop one. The basic idea of the switch to capabilities was to get rid of the old way of modernizing by replacing equipment with newer and more performant hardware and to move towards considering the best options among a wide range of solutions to create the desired effects. Without a new method to develop a capability, the old way of doing things would stay.

A New Approach

In 2007, after some trial and error, this new method was published in a strategic level directive (Ondersectie Strategie, 2007). The purpose of this directive was “to define the process to be used within Defence for developing a coordinated and coherent approach across all “lines of development” in order to achieve new or transformed capabilities. These capabilities are based on the strategic orientations of the applicable Belgian Defence Strategic Plan and its subsequent Steering Plan and further developed through the cooperation of all Staff Departments (ACOS) and Directorates General (DG). The overall objective of this transformation process is to provide capabilities for operations.” This directive had a transformational punch, and its conception was heavily supported by senior military leaders.

The main advantage of this new approach was that it was simple and therefore very powerful. The transformation from the strategic orientations towards an effective capability “ready to use” in

¹ See Interforce (IF) 69 directive with definitions and terms used in the Belgian Armed Forces

operations was characterized by the four consecutive phases illustrated in Figure 0.7: identification, development, implementation and management.

During these phases, all lines of development had to be kept aligned. These lines are summed up in the acronym DOTMLPFI¹. This interdisciplinary alignment combined with the consideration of non-material focused solutions to capability gaps promotes thinking outside the box and creates connections over the organizational silos.

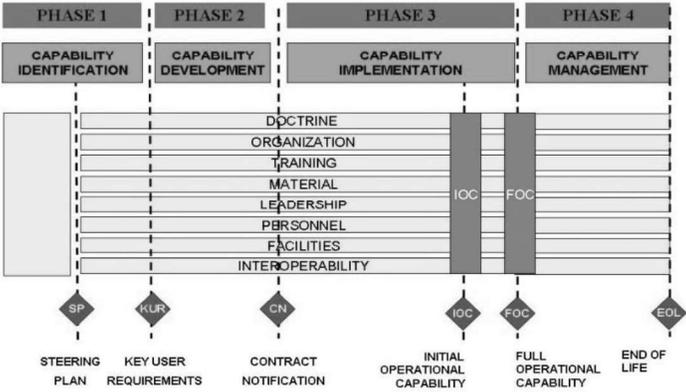


Figure 0.7: Transformation from Strategic Orientations to Capabilities for Operations

Due to the organizational design of the Department of Defence, the process had an added layer of complexity to make sure that the unity of command stayed clear. In every phase, the supported and supporting ACOS/DG were clearly expressed.

¹ Doctrine, organization, training, materiel, leadership, personnel, facilities, and interoperability

Towards Failure

Not for the lack of written and verbal support the process never reached full potential. Later versions of the directive describing the process added more complexity. Making the process more complex with more decision points and more working groups did increase the flow of documents and people involved, but the success rate and commitment went down.

For an explanation of the causes of this low success rate, we have to zoom into the capability identification phase. In this phase, “the necessary Defence capabilities are identified according to the Strategic Plan. [...] From this Strategic Plan the strategic department ACOS Strat identifies ways to develop or transform the necessary capabilities. The accepted way is translated in an approved capability concept that provides the necessary information to facilitate the development of the capability.” This was explained in an older directive (Ondersectie Strategie, 2006) and gave guidance on how to develop concepts.

In the 2006 directive, a concept was defined as “the formulation of a possible way to reach or to execute something”. This older document was even more transformational and went almost directly to the weak spot of the whole approach.

First, it made the distinction between a transformational and an applied concept. The latter was approved by the Chief of Defence (CHOD) and was an order to be executed. As the former was not for immediate action but for long-term planning, it was not officially approved. Its benefit was that it could serve in the future due to a change in our environment. This differentiation should stimulate creative thinking, as the goal of the identification phase was clearly not limited to get a concept approved, but to prepare options and enhance the proactive preparedness for likely and unpredicted changes in the future.

Second, the identification of a concept followed another four-phased approach: discovery, exploration, definition, and acceptance. The discovery phase was the simplest as well as the

most critical one. It was not only the start of the whole capability development process; it also contained the key to success or failure. The aim of this first phase was to explore, formulate, capture, and assign conceptual ideas. Although ACOS Strat was in the lead of this phase, every person was urged to be part of it. The discovery of conceptual ideas was to be executed during planning activities, through passive observation of the “external” environment, or by actively agitating the whole organization. This agitation could be done in a number of ways, e.g. organizing reflection and freewheeling days, holding cross-functional working groups, or attending meetings of non-military organizations.

In its final remarks, the 2006 directive recognized the creative nature of this phase. It stated that the expression of conceptual ideas requires ingenuity and intellectual courage. This can only be achieved in an environment of trust and confidence. It stressed that although the process gives the impression of a structured approach, in reality this will not be the case. A great deal of freedom and flexibility is needed.

Where Did It Fail?

The Belgian approach to concept and capability development as captured in both directives was certainly not rocket science. Why then did it not work? In addition, why did the discovery phase hold the key to success?

The discovery phase should have led to a chain reaction of ideas. The use of the DOTMLPFI not only needs to stimulate interdisciplinary crossovers, but should lead to a creative process of destruction and construction. As John Boyd explains, “to comprehend and cope with our environment we develop mental patterns or concepts of meaning. [...] we destroy and create these patterns to permit us to both shape and be shaped by a changing environment” (Boyd, 1976). Transformation is continuous change. It means working in constant ambiguity, in a kind of tolerated chaos. What is effective, efficient, and affordable today must be changed

to stay effective, efficient, and affordable tomorrow. The 2006 directive rightly recognized this, but it was never supported by the needed cultural change. We are by design lazy; we would rather stick to our thought patterns and reinterpret reality than change our thinking (Kahneman, 2011).

Designing the process and later complicating it was easy, but changing the culture to support it proved much harder. Or was never fully understood. Without a cultural realignment, the fresh drilled well of ideas soon dried up.

Cultural Change

A military culture is counterproductive to nurturing a creative environment. The power lays in numbers. One transformational idea is not born out of stubbornness, but out of killing 10,000 ideas. To find the right one, we have to accept 9,999 “failures”. Moreover, failures do stand out on a military CV. Accepting “failure” becomes even harder if an idea has already passed some hurdles. We prefer to push an idea further through the process, far beyond its life span, rather than to kill it. Charles Darwin claimed the survival of the fittest, but he did not mean that only one species should survive (Darwin, 1869). No, his law expresses Mother Nature’s wisdom that only the combination of creative variations and a severe elimination process leads to good, sustainable results. Why should that law not be applicable to ideas?

In our push for efficiency in times of shrinking budgets, we consider killed ideas as pure waste. Edison did not consider his short-lived ideas for a prototype of a lightbulb as failures, but as discoveries of ways how not to do it.¹ Great painters like Rubens or Picasso seldom painted a masterpiece in one try. They needed tons of sketches.

¹ “I have not failed. I’ve just found 10,000 ways that won’t work.” – Edison, T. A., as quoted in Furr, N. (2011).

This does not mean that concept development is only about creativity; it demands lots of dull work and tenacity. To turn a good concept into reality, we need rigorous planning and strict control in the later phases. However, our preference for a controlled environment and the necessity to spend more time on the “hard” side of concept development endangers the discovery phase, where creativity is key.

For the successful implementation of concept development, you need a new culture. One that tolerates failures, that finds a balance between chaos and control, that dares to leave the efficiency path in favour of brutal quantity, that acknowledges that the quality of an idea does not relate to the rank of the beholder,... you need people who introduce big and small changes. People who propose new approaches: champions of change. Also, people who mature and nurture those ideas and turn them into reality, who walk the long distance between idea and application. People who channel the energy, who dare to stand up and constructively question everything and everyone. Without this change, the elaborated development process will run idle.

Before complicating the development process in the urge to “repair” it, you need to revisit your culture and question its compatibility with the requirements of the discovery phase. If it is not fit for this purpose, you need to spend time and energy to change it. Just acknowledging this like in the early period in Belgium is not enough to reach success. Ideas, creativity, and grass do not grow by force, but by cultivation.

References

- Boyd, J. R. (1976). *Destruction and creation*. Leavenworth, KS: United States Army Command and General Staff College.
- Darwin, C. R. (1869). *The origin of species by means of natural selection, or the preservation of favoured races in the struggle for life* (5th ed.). London, England: John Murray.
- Furr, N. (2011). *How failure taught Edison to repeatedly innovate*. Retrieved from <https://www.forbes.com/sites/nathanfurr/2011/06/09/how-failure-taught-edison-to-repeatedly-innovate/>
- Kahneman, D. (2011). *Thinking, fast and slow* (1st ed.). New York, NY: Farrar, Straus and Giroux.
- Ondersectie Strategie. (2006). *Leidraad voor het ontwikkelen van concepten* (ACST-SPS-CGEN-SXX-001). Brussels, Belgium: Defensie.
- Ondersectie Strategie. (2007). *Transformation from strategic orientations to capabilities for operations* (ACST-APG-CGEN-SXX-001). Brussels, Belgium: Defensie.