A Day at the Headquarters Supreme Allied Commander Transformation

Van Hoeserlande Patrick

Introduction

During the transfer from the ACT Blog to Connect, my first article disappeared. Now it is back online.

How to explain the feeling of “transformation”? A fair, but tough, question. It is much like trying to explain (good) leadership. Look in a library and you’ll find an aisle filled on that topic. But, after reading a few books, you will realise the different angles to look at it, have an idea of the important elements of it, you may even acquire a mental concept of it, but you’re still not able to really explain it. The same is true with a “transformational feeling”.

In one of my folders with interesting stuff which I keep, I found an old slide – one of the far-gone days when you have to copy your powerpoint slides on a transparency which contained the sentence: ‘Leadership is like beauty. You’ll recognize it when you see it’. I always appreciated this simple truth.

A look at it inspired me not to try defining the transformational feeling, but instead to show it to you. As such, I take you to a not-so-far-into-the future and invite you to join me on my working day as a staff officer at the HQ Supreme Allied Command Transformation.

Hoesy

Just an ordinary day at HQ SACT, somewhere in the near future

Around 0700 L turn on the parking lot. I’m not the first one to arrive. Luckily, my usual parking space is free, so I don’t have to be on the lookout for a nice spot. All humans love a certain degree of routine, and I am no exception. Parking my car at my spot makes, kind of, my day. I always come in early, partly because it’s my routine, but also because, with the “customers and providers” six time zones away, it gives me more than ample opportunity to have phone conversations, or even “near real time” email communications or chat with them via my desktop Link/VTC interface.

That comfortable feeling of routineness partly disappears when I step in the main hall of the HQ. As our vision indicates, we are 'NATO's leading agent for change, driving, facilitating, and advocating continuous improvement […]' and that comes with continuously questioning routine. The search for improvement is always present, never finished. The moment something is marked as a 'fait accompli', it is ripe to be questioned. 'Is there a better way? Is there a way that is more efficient, effective and affordable?'' are the main questions on everybody's mind. There is no way around this if we want to "lead NATO's military transformation" and stay ahead of it.

It seems quite natural today, but a few years ago it was not. This HQ had lost it edge. Instead of leading the change, it had dropped back to the rear of the transformation movement and was almost entirely reactive. Some even thought that transformation was finished – we even removed the slogan from the main hall. Completed. It reminds me of the story when the US commissioner of the patent office made the statement that the Patent Office should be closed because "everything that can be invented has been invented" (Duell, 1899).

The result was that this HQ felt like an HQ without troops on the ground looking for arguments to justify its existence. It had no external focus and internal alignment, so all the competences and motivation of its members were wasted. A three year tour in Norfolk meant a nice collection of memories and adventures, outside work as well as an improved golf score.

Not anymore. Today, this place is buzzing like a beehive in full Summer. Here you learn the true nature and power of transformation; an experience you'll never forget; a competence that will never leave you. Work of a staff officer as you knew it, is history. How? I guess that's why you follow me on this trip.

As I swipe my card, I gain access to my work floor. It's a bit strange to use the word 'my' because, from time to time, I'm working at another desk. I have an assigned cubicle, a word dated from a few years ago when people really were cornered in cubicles. Like all human beings, officers like a familiar place they can call their own – you know, somewhere you can hang some pictures of the family, leave in a state of chaos, etc. – But that is not the place I always work. From time to time we have to work in the area of another division or branch. You still do your assigned work, but you simply sit amongst the 'others'. This creates opportunities to learn to understand the other branches and their issues. On other occasions, your desk sits where your project is. This improves the informal discussions amongst the members of a project in the initial phase. These temporary 'other branch' periods enhance better understanding and increase mutual knowledge. It's about collaboration and understanding.

But today I'm working from 'my' desk. The daily routine, yes there is still a routine, is made up by starting the desktops and connecting to the two networks. There is a project to make a

virtual unique network, but due to security regulations it is not implemented yet. While the systems are starting up, I pour a cup of coffee. On the wall are hanging some of the problems JFT is currently working on. Under the problems people wrote some suggestions to solve them. I cannot resist the urge to write a reply to an interesting idea. Since the Smart Board system automatically saves this work once an hour and captures it onto the JFT shared solutions page, maybe this will lead to something workable?

Back at the desk. My colleague from DCOS SPP just arrived at his temporary one. Yesterday, we were discussing the commonalities and differences between defence planning and training. Some interesting leads came out of that one. My e-mail inbox warns me of some deadlines I have to keep an eye on. After I decide the project I'll work on, I delete the other taskings. They will pop up later, no worry about that. Deleting is not forgetting.

A meeting reminder about a video conference pops up. I log into the Link system and activate my webcam. I am observing a Logistics Committee meeting so I can better understand the requirements. After an hour, the meeting ends and I review my notes about the meeting which I typed while the meeting unfolded. The topic just got a little clearer as I listened to senior logistics officials' concerns.

I check the e-mails. Europe is not calling 'urgent' so I have time to take care of the rest before focusing on my project of the day. While we're in transformation, as always, there is still a lot of ordinary staff work to do. Good ideas still require staff work and lots of 'selling' before they become reality. But, at least we're now pushing the best ones, and not that first good one.

A sound warns me of an incoming e-mail. This mail indicates that somebody changed my information page on Global Programming. Yes, everybody has the duty to adapt information in our knowledge base if they believe it necessary. This was just an internal application of Wikipedia, but it helped greatly by facilitating the exchange of knowledge in the HQ. I have a quick look at the introduced changes. It's mainly an update from a meeting on concept development. My contributor picked up some elements on education and added that to my page. Great! But there she's got it a bit mixed up. Time to see her.

Most of our work may be done on the network – I could correct her on my page – but meeting people is still all important aspect in this HQ. I take my smartphone. The HQ App will guide to the right cubicle. The temporary desks made finding people a bit harder, discovering their normal cubicle was a challenge on itself, but with this App, it's a child's play. The face-to-face solves the misunderstanding. I thank her for the contribution, because feedback may not scare people from contributing.

Back on my project of the day. My correspondent refers to a directive that is unknown to me. A quick check confirms that the directive is still valid. Gone are the days were a simple question like 'Is this directive still valid?' meant going on a quest for the answer. The paragraph used as a reference seems outdated. I add a comment in the directive, so that this will be considered in the next revision.

A pop-up warns me of the upcoming open meetings at 10. Everybody is invited at open meetings. What is 'open meetings', you ask? It is a kind a chaotic order. In the centre of the room, there is coffee and water. You take one and meet there, but the main purpose is that you go into one of the little meeting rooms and participate in the discussion. Before you enter you have to read the topic of that meeting. It's only a few sentences long and you don't have to be an SME, on the contrary. Once inside you have to actively participate. If not, you leave the room and go to another discussion room. Of course you may return if you wish to do so, but only to participate. This is the only rule: come in and participate. The whole set-up lasts an hour.

I have one hour left before lunch. I could use some help from an Intel SME. Not necessarily someone from the Intel Branch in the HQ, no, an Intel expert wherever he or she is working. A look in the database – this database with the names and there competences is inspired on the skills app from LinkedIn – gives me 3 names. I think about inviting one of them for a person-to-person video call. Yes, we make video calls with our PC. We use the VTC system only for big group meetings. I decide not to call, a mail will do the job as this info is not urgent.

Lunchtime. I take my lunchbox downstairs to the mess hall. Today there is a learning session on scenario development. 30 minutes on the 'what' and the 'how'. After the theoretical introduction, every table has to discuss possible applications. These sessions are fun because the applications are not directly for the HQ, but for the situation you get from the session leader. It keeps your mind open.

Back to work. It's strange that I reserve the term "work" for all the dull, yet necessary, but nevertheless dull, staff work. All the rest is fun. I upload my product into the Tasker Tracker. Yes, that system still exists, but it now tracks a task from the very beginning, from its genesis. Rather than it being the old "reactive" system it was, it is now a much more "proactive" way of doing collaborative work. We don't see it as a burden anymore because it helps us to keep track of our projects while supporting the decision making. Today, I'm initiating a thought project. I add the contributors that I think I need, they will help me find more linkages.

Bling, an e-mail drops in my box telling me that an idea of mine survived today's Murder Board session. The murder board is group of peers that scrutinizes all ideas and sums up the pros, cons and promising elements. In the end, it advises to kill it, keep it for further improvement or

push it up the command chain. Its verdict is ‘most promising’, meaning I have work on some cons before introducing it again. This method may look harsh, but the feedback is very useful and it promotes the creativity in the HQ by installing a forum for ideas.

Although we know that good ideas come from quantity (Edison ‘invented’ the light bulb after 5000 times learning how not to do it) combined with unbiased, honest feedback; it always feels great to get acceptance of one’s ideas. Understanding that failure is the natural selection to breed the best of ideas and the base for learning, you’re less afraid to introduce an idea or an improvement. It does not have to be ‘the one’, only ‘one of the many’. Taking risks is now OK; frustration is replaced by hard work to make it better. But still, it feels good to come up with something that may be realised.

How to spot problems? Just keep your eyes open and you’ll find them, or have a look at on the intranet. On the ‘issue page’ you’ll find topics to think about. You can post issues yourself or you can make suggestions to solve them. If you collect enough likes, eventually after some adjustments, you can introduce your idea to the murder board. It’s that simple.

Next, a meeting within JFT. Our proposal for a change in the E&T domain is in its last phase. Before sending it out we play ‘MC’. A few, newly arrived officers play ‘nations’ when the custodian formulates the change. Then the ‘nations’ react on that. This ‘customer’ interaction play provides insight and makes it possible to increase the chances of acceptance. It’s harsh, but fun.

It is not because we already invested a lot of work in it, that we do not stay critical. ‘Look at what we already have done’ is no excuse to try better. But, we don’t forget that sometimes 80% is just fine as long as we have a way to improve it. Spiral development: a clear vision combined with a flexible and adaptable approach.

The ‘nations’ didn’t buy in, at least not into everything that is. There is some more explaining to do, but it is going well.

A last look at the mailbox. Nothing urgent. I consult my reader and pull up one of the e-books from ACT’s professional reading list, “Thinkertoys”- a brainstorming and problem-solving book that helps you to look at problems differently. A new thought is formed about how I might move forward on a ‘sticky’ issue.

I look at my watch and decide to call it a day. As I walk out the building my brain is still busy searching for ideas. When I hit the HOV lane, the processing descends to a subconscious level. Maybe tomorrow an idea will bubble up out of the blue, but for now I’m thinking on how to improve the mouse trap car of my son’s science project. Once submersed in a culture of

continuous improvement and innovation, there is no escaping from it. It makes life more interesting … Even work.

Why Action Appeals More than Transformation

and What to Do about It!

Van Hoeserlande Patrick

In all my naivety, I have these strange ideas about the work in headquarters.

A vibrant ambiance at tactical level. Life and death decisions are made every moment. With the speed of decisions comes also the short time before consequences. The slim OODA-loops[1] turn at high speed.

Go to a level higher and step into the operational world. A bit more relaxed, but nevertheless busy. People normally don't run around making sure important information is injected into the decision-making cycles. Although from time to time snap judgements are necessary, they are rather rare. Possible consequences can be analysed and there is time to determine the best course of action. Effects of decisions take a little while before being felt. Life depends more on the quality than on the speed of the decision-making cycle.

The ultimate, strategic level is Zen-like. Time is not of the essence, quality is! Consequences are slow to manifest themselves, but if they do, they hit like a tsunami – however, by then, the decision makers are long gone. Their effect can be devastating, earth-shaking. Decision cycles are very slow. The staff fully embraces the power of the extended OODA-loop by sucking up and analysing huge quantities of information to come up with the almost ideal and most robust plan for the future. The life and death realities at tactical and operational level lay already in the past. The only guy running is the bearer of very special news – for some odd reason I always envision this guy running in an empty hallway – but this is very seldom, if ever, the case. The 1/3 and 2/3 rule for allocating time seems to be reversed as to give higher level decision makers more time than the actual planners.

But, these are my ideas.

So empathize with me entering our strategic headquarter for transformation. The only time the building breathes the calmness of my vivid imagination is early in the morning when the sun is hardly awake. As people pour in, tension rises. E-mail boxes are bombarded with messages launched like dumb bombs screaming for attention without any consideration for collateral damage. Meeting requests pop up demanding their acceptance, pushing people out of their

[1] OODA-loop = Observe – Orient – Decide – Act loop developed by USAF Colonel John Boyd.

cubicles. Taskers with self-imposed deadlines tumble in. You have almost to beg for a few minutes of your colleague's time, because everybody is very busy. There is confusion between urgent and important when prioritizing or re-prioritising tasks. No, no confusion: urgent equals important. "Oh, that can wait. Put it on my desk, I'll deal with it later." "We don't have time to think about it, we must do something… Now!" The re-prioritisation is an hourly task.

Every day, we face situations where we are more like firefighters, more like our colleagues in the warrior mode at tactical level. We find ourselves in a permanent situation of quick fixes in a reactive mode, unable to control our destiny because it's controlled by external elements. Pressure to meet deadlines, reinforced by our military culture to be on-time, makes us shoot for 'a' timely fix, regardless of the consequences.

Firefighting may be essential during a rush, or as part of a short period of change. However, it can have serious implications when it becomes the norm at the strategic level. The energy and resources drawn by firefighting make us lose our capability to plan for high-return activities where our real added value is situated. Why?

1) Reactive people, and teams, are likely to deliver lower quality work. They may be able to fight crises successfully most of the time, but they will ultimately fail in a way that they would not if they were proactive.
2) In the near future, the flaws of the quick patches demand additional resources to be fixed, diminishing more of the needed reserves to manoeuvre.
3) It is likely that people will need to shift from one task to another, or be asked to deal with constantly changing information. Those people need time, usually not available at that moment, to get to grips with their new tasks while specialists are too busy – hopefully on topics in their specialities – to help them out. This is inefficient. It can leave HQ SACT personnel frustrated. They may start to let down their desire to strive for quality or to confuse the notion of quality with 'just being on time'.
4) 'Firefighters' content themselves with putting out the fire. It's hard to consider the root causes of problems when you have to focus urgently on eradicating the symptoms. Plus, you're less likely to spot the strategic opportunities because you don't have the time nor the mindset to see them.
5) Being in a 'fight' is also stressful. When you deal with one crisis after another, you don't have time to unwind. You may personally be able to cope with this pressure, but some colleagues may be less resilient. They may find acceptable ways to escape the work stress increasing the load of others, and, in time, this will lead to serious under-performance of a whole organisation.

6) You're always a step behind because you wait – or rather you're busy with another crisis – for a fire. You don't have time to look ahead to pre-empt problems, so they seem to happen 'out of the blue.'

There is, surely, also a '7)', an '8)', etc., but I think you get the point. The focus on the here and the now leaves us no time for laying the foundations for a different future for transformation. We must take a few steps back and figure out why problems occur in the first place. We should spend time on preventing future problems, on giving more peace to the operational and tactical level. Paraphrasing Einstein, we should come up with another level of thinking than the level on which the problem was created. Sounds more like something we should do? Then why do we engage more in firefighting?

As a military professional, you are raised to solve problems on the spot and under high stress. The firefighting mode is well known, well drilled in, and very well appreciated. We admire people in firefighting mode as the very busy heroes tackling urgent, high-visibility problems with a great sense of purpose. Wearing the military uniform may remind us of our ultimate goal of supporting the warrior, but it also reinforces our tactical mode. When you solve a crisis, you have a great, immediate sense of accomplishment. You do what you are trained to do and you experience somewhat of a kind of high, which can be addictive. The fact that successful organisational 'firefighters' are rewarded and praised for their great skills, enhances this tendency. Also, it's easier to address an issue right in front of you than to anticipate and plan for the issue and prevent it – let alone the frustration when by successfully preventing it, the problem, surprise-surprise, does not occur.

You would expect commanders, embracing transformational leadership, to leave the 'warrior' mode to lower staff. Unfortunately, where and when do they learn how to do this? Who can teach them? Can we honestly expect someone raised in a warrior culture to integrate transformational behaviour while being surrounded by fires, and happy firefighters? Of course, these people exist, but they are for sure not standard issue. Thus, change by leadership alone is not the solution. We all have to pick up the effort to change, and learn – and teach – while doing.

How can we reduce the habit-forming problems that continuously drive us to be reactive? What can we do to grab some time to work on the less urgent but more important issues? There are many ways to do this, but here are some suggestions. These ideas are by no means revolutionary, that aspect lays in their application. Keep in mind that reactive management is necessary at times. However, it is destructive when it becomes the norm in a team or organization. To move towards a more proactive way of working, we have to:

- Take back control of time

- Look at processes
- Understand and manage risk
- Focus on morale
- Build in continuous improvement
- Have a vision
- Integrate the steps towards the vision, even when firefighting
- Use the “fires” to heighten the need for change

Firefighting is an emergency allocation of resources, required to deal with an unforeseen problem. Just as in the real world, there's the assumption that ‘fires’ and crises are unpredictable and that they must be dealt with immediately. However, a too-frequent need for emergency action may reflect poor planning, or a lack or organization, or a lack of understanding the problem, or being the result of self-imposed deadlines, and is likely to tie up resources that are needed elsewhere. To keep the warrior mode to a minimum, in order to transform an active approach to change, our culture is paramount.

What about DOTMLPFI?

Van Hoeserlande Patrick

A few months after my arrival in this HQ, a colleague initiated a project to define DOTMLPFI. Imagine my surprise to discover that such an undertaking was necessary. Was this not common knowledge? Even more surprising was the fact that some of the provided information, certainly in regard to the 'L', was misleading. A few months ago, a Swedish correspondent suggested explaining the acronym as an improvement for a directive. So, I thought this might be a good time to revisit this strange acronym.

DOTMLPF was invented by the United States Department of Defense. In its effort to be transformational, the Joint Capabilities Integration Development System process – you don't have to memorise this - considered solutions involving any combination of doctrine, organization, training, materiel, leadership, personnel and facilities (hence the word DOTMLPF). Because combatant commanders defined requirements in consultation with the Office of the Secretary of Defense, they were able to consider gaps in the context of strategic direction for the total US military force and influence the direction of requirements early in the acquisition process. This approach was readily adopted by other nations in the transformation wave that swept over the world.

Since its introduction some 10 years ago, the acronym also serves as a mnemonic aid for planners to consider certain issues prior to undertake a new effort. Doing this, opens the mind for non-material focused solutions to capabilities gaps and promotes thinking outside the box. This interdisciplinary approach forces connections over the organisational silos and leads to a multitude of innovative options to fill the considered capability gap.

The letters – maybe we should make a song from them like in the family movie 'The Sound of Music'- and their meaning, in short:
D – Doctrine represents a common way of thinking about or a good – I'm not a fan of 'best' practises – practise in a particular issue or problem. Doctrine encompasses tactics, and the specific procedures for conducting tasks.

O – **Organisation** defines the structures and groupings that are used by formations and units.
T – Education and **Training** includes the full training spectrum of education, individual and collective training, and exercises.
M – **Materiel** includes specific equipment, weapon systems, stores and technology. In the 'old days' this component was the focus of the capabilities. Tanks were replaced by better tanks, airplanes by better ones, etc. There was not much consideration on the impact of the other components. Material was leading the way, but the DOTMLPF approach wants to change this.
L – **Leadership**, I skip this one for the moment.
P – **Personnel** represents the type of servicemen or women that are needed. This includes identifying specialists and/or specific skills that are needed.
F – **Facilities** is a generic heading for all infrastructure needed to accommodate, train – this is not the training itself - and prepare any military forces.

In adopting this approach, NATO uses the same acronym with the same meaning. However, the Alliance added the 'I' to the acronym to make it 'DOTMLPFI'. This small adaption makes the acronym more sound like a real word – try it – but that was not the reason. This added 'I' stands for 'Interoperability'. Interoperability is the ability to work with other – pay attention to 'other' - capabilities throughout NATO. A purely national capability may be fine, but is nearly useless in a coalition. The introduction of the second vowel was done for the obvious reason that being able to work together is key for successful operations by our very diverse organisation. And cooperation doesn't come natural, it requires work. And attention.

You could rightfully add other letters to it. Why not 'R' for 'Resources'? No problem. Just keep in mind that the more you add, the more you complicate things. So, try not to exaggerate. Keep it simple.

Until here, no problem. Trouble – if one can call it so - starts when we go into the details of the 'L'. But before doing this, let's explore the 'why' a little bit further. Our acronym is a transformational tool – transformation is basically simple but hard work – because every workable combination of the DOTMLPFI - we're NATO so I stick to the extra 'I' - gives a capability (the discussion on the use of capabilities is not the focus of this article). Some of the numerous combinations result in the same or comparable capabilities, but others are quite unique. Every combination comes with its own strengths and weaknesses. Thinking along those lines broadens one's perspective and opens previously not considered solutions to a problem. This renders it possible to discuss capabilities instead of equipment only.

It also means that altering one component (that is a 'letter' of the acronym) may create a different capability. And also, neglecting one letter leads to no capability at all. Try it: pick a capability, describe it by its letters, pick a letter, change something and discover what you get. Surprised? How should a Close Air Support capability look like without trained Forward Air Controllers? What about artillery support without guns?

Furthermore, by using DOTMLPFI as a framework, each component for a specific capability can be examined, first individually and then in relation to others. This methodology not only ensures that a wide range of potential solutions for improving or developing a capability is examined, but it also recognises the interrelationship – or to say it differently, the internal interoperability - of every component of DOTMLPFI. So, not only the individual components are important, also their relationship. They should not be looked at in isolation as each has the potential to influence the other. For example the introduction of new material may require changes in doctrine, training and organisation. A doctrine for a squad of 9 makes no sense if your vehicle can only transport 5 soldiers. However, in an attempt to identify the broadest range of potential solutions for a particular capability, each component of DOTMLPFI should be examined without initial considerations to its impact on other DOTMLPFI components. This results in a number of potential solutions being identified to realise or improve a particular capability.

Back to the letter 'L'. What about Leadership? Here it goes wrong, I think. Remember, we want to keep it a simple analytical tool!

Initially this component was defined as specific training for leadership. This referred to the development of leaders, primarily through further education. The problem with this definition is that it makes an artificial distinction between the component Training and Leadership training, without really explaining the 'what' or the 'why'. It also enforces the creep towards 'Leadership development', omitting the core of 'leadership'.

The L stands for 'Leadership'. Period. Drop the training or development because that's part of the (Education and) Training component. Hands off!

'Leadership' tries to answer the question on how (military) leaders have to use the considered capability. Imagine developing a Special Forces Capability. You develop and connect all the components, but forget to define how your leaders – who are not part of this capability - should use this. If they use it just as regular infantry –

who shouldn't they as nobody told them differently? -, do you have accomplished your mission? I don't think so. You just created some well-trained soldiers. Nothing more. Remember, forget one component and you have nothing.

From a different perspective you may create a new capability by applying an existing capability in an innovative way without changing the other components too much. Leaders may really make a difference.

Could you achieve this with just 'leadership development'? No way. Of course we have to develop leaders, but that is part of the Training component of the capability called 'defence'.

Together with interoperability, the leadership component is externally focused. It considers the capability as a package and looks how the external environment should use it. Interoperability - not of the internal components because that what DOTMLPFI is all about, but with other capabilities - looks how the capability can plug into the outer world and interact with other capabilities.

Developing new capabilities is a matter of considering all components equally important. Not just 1, like we did before. Changing one component and considering the effects on the others is an interesting, creative activity that leads to surprising combinations. It frees the mind of the chains of the services and functions. Combinations never thought off surface. And that is the real power of this approach. Capability development is a continuous search for the optimal combination in a changing world. It is a work of trial and error. More errors than successes, but that is how it goes with creativity.

Once a possible winning combination is found, the further development still needs to be checked with the DOTMLPFI framework, but that is another story. Food for a follow-on article?

The Kingdom of the Grey Mice

Van Hoeserlande Patrick

Somewhere on an island, I have forgotten the name, in the Pacific Ocean live a special type of mice. All mice on that island are born pink. Nothing special, but during growing up their colour changes: some become grey, others black. Although the cause of this colour transformation is not yet known, biologists claim to observe a clear difference in behaviour in relation to the colour at adulthood.

The grey coloured mouse is barely in the open and slips away at the smallest disturbance. You must look for him (or her for that part) in the quiet centre of a colony, usually well shielded from the outside world. The grey mouse manages his nest as clockwork. He seems to manage this complex micro society as smooth and efficient as possible. Each member performs what is expected of him. In short, a grey nest is a model of peace and control.

You don't have to search for a black mouse. He will find you. You feel his presence when he's around. He's personally involved in everything he does. In his nest, the mice are very driven. They are, as it were, inspired and committed in order to achieve something. The nest is usually located at the borders of a colony and is a hive of vibrant passion. If you approach a black nest, you risk being attacked by a small group of mice. A black mouse does not flight from difficulties or danger; he faces it heads-on, very often supported by the co-habitants of his nest.

Biologists were not only puzzled by the colour transformation, but also by the ratio between the two colours. Although inhabitants of black nests are clearly better off, they discovered that the grey mice forms by large the majority. At first sight, black mice are better adapted to the environment, but it was found that the grey seem to 'thrive' nevertheless. Only after long and accurate observations could this apparent, Darwinian contradiction being explained.

As told, all mice are born pink. It can be stated that there is, not taking the natural environment into account, an equal chance to transform in black or grey. However, it was observed that the grey colour dominated in a protected nest. The social behaviour of these rodents specie may explain the colour anomaly. The grey mice stimulate their flight behaviour by a complex system of rewards and punishment. Experimenting and making mistakes are almost immediately punished. Sometimes by mutilating or even killing the offender. After reaching this conclusion, the biologists were no longer surprised that a lot of potential adventurous black mice never reach their full dark colour, but turn into the safe grey.

The individuals who leave the nest with a black colour are not out of harm's way yet. As long as they have no own nest, they are considered by their colleague-mice as outsiders. Although most of the grey feel safe in the environment of an adult black mouse, they punish him almost immediately if something goes wrong. This happens frequently, because a black mouse takes initiative and does not run away if something goes wrong or if normality is disturbed. Sometimes, a black mouse is simply kicked out of the colony.

Trying things and taking responsibility, also ensures that a black mouse very rarely leads a colony. In fact, most of the grey mice want a quiet and calm colony. Their nest is what counts, for the rest they want as little disturbance as possible. Black mice do not sit quietly but want to expand, improve, do things ... and that means change. A thing grey mice thoroughly hate.

External factors also contribute to a lower ratio of black mice. They nest at the edge of a colony, where existence is more challenging. If things are really going bad, black nests may be completely destroyed. If the colony is attacked by predators, the black mice are the ones defending it. Of course, a successful counterattack sometimes means victims under the black mice.

After these observations the biologists wondered how to explain the existence of black nests. If everything was against them, how could they even survive? And have nests? The answer was cruelly simple and became clear by accident.

At the end of the observation period, it began to rain. Finding food in the environment became difficult. After a few days of bad weather, the colony began to realize that something had to be done, a disaster was in

the making. The grey mice became more and more nervous, but nothing happened. Even the first victims from starvation did move them into action. Much nervousness, no decisions.

Until a few black mice took over and moved with a few companions to a better place. They tried in vain to convince grey mice to go with them. The grey mice that stayed in the colony all died of starvation, while those few that left created new, successful colonies.

When, after some time, the group of biologists returned to the island to study the new colonies, they did again a strange discovery. The new colonies, which originally had a high ratio of black mice, were now prosperous but predominantly consisted of grey mice. The ratio was again in favour of the grey mice. The black mice, although they saved the species, were again nesting at the edge of the colony. Probably until the next crisis.

Some thought that the individuals in those colonies were stupid. They should cherish and treat their black mice with respect. However, evidence points to the conclusion that those colonies always turn predominately grey until the next disaster. Evolution knows no direction, no purpose. It is a 'blind' process, not good, not bad. Not smart, not stupid. Purely a form of change. A thing biologists only can observe.

The question is whether we want our organisations to follow this purposeless evolution. Do we prefer to wait for the next crisis in the hope that there are still enough black mice to save us? Or do we want to transform?

When is the Last Time You Hugged Your Transformer?

Van Hoeserlande Patrick

Change does not come easily. Some scholars are even convinced that change is difficult and that people naturally resist it. If a single change effort already bares the etiquette 'challenge', imagine the difficulty of a transformation. Not the kind of transformation that someday is proclaimed finalized. No, not that, but the state of mind accepting a relentless, never-ending change. Working in constant ambiguity and a bit of tolerated chaos. No day the same. What is effective, efficient and affordable today, must be changed to stay effective, efficient and affordable tomorrow. And improve it again the day after. That kind of transformation, pur sang.

For that kind of continuous change, you need people who introduce big and small changes. People who introduce new approaches, who are champions of change. But also people who mature and nurture those ideas and turn them into reality. People who channel the energy; and people who dare to stand up and constructively question everything or everyone. But, how to motivate them?

Let's talk about incentives!

The first thing that comes to mind is: money. Pay those who go in the right direction, supposing you know which one that is, a more. Sounds simple, but unless, you really talk about big incentives for clear cut goals, it doesn't provide that much of a motivational impulse. Although most HR-departments consider this key, I distrust the power of money as a motivational tool. The American psychologist Herzberg, though his method may not be error free, considered one's salary as a 'Hygiene factor' because it does not give positive satisfaction or lead to higher motivation, though dissatisfaction results from its absence. So money will not do the trick. I agree. When was the last time you jumped up of joy after receiving a raise? Hard to recall? Not surprised. How long did your happiness last? Certainly not months! Maybe days, but more like hours. Right?

But even if money was the motivator (in capital letters) nec plus ultra, it would be a no-go in our headquarter. I cannot imagine nations giving lots of money to SACT to motivate his

workforce. If money does not work, what then? Stay with me, and try not to remember that the title of this article gives away the solution.

As military, not unlike scouts, we love showing our accomplishments through colour codes. It even sounds nice when we wear them in full: ribbon and medal. The cling-clang noise signals someone special, because decorated, is walking. In a multinational environment where the visible code of ranks are not obvious to all (and certainly not to newcomers), the complexity of those chest colours is used as an indicator of seniority, hence importance. If, according to Napoleon Bonaparte, a soldier will fight long and hard for a bit of colored ribbon, why not introducing a NATO medal for transformation? In a military headquarter, and I'm quite sure our civilian colleagues would also appreciate it, this should create a great effect.

Of course, I make the assumption that the number of medals would not be limited. Why? Well, what is the use of giving a medal to one, when there are ten who deserve it? Why giving one when there are no good candidates, just because a year passed by? Everyone who deserves one, must get one. At, or at least very close to, the moment he/she deserves it.

That is where our medal system fails us. We find it so important that we sacrifice speed for being right. Once we give someone a medal, we cannot take it back. We do not like 'sorry, you did not deserve this medal' ceremonies. So, we take our time, and a lot of paperwork, to investigate before getting a new one out of his box. Or, we keep the rules very easy, like so many days in the area of operation, to prevent mistakes. With the pace and complexity of transformation, 'a public thank you for what you did 6 months ago' completely misses the intended effect. We love our medals, but for fuelling transformation, they just won't do the job.

What's left? Giving more responsibility or autonomy? That would be the answer when asked to an expert on organisational motivation. Although I 'm convinced this could have a positive effect, this means that our organisation must be (re)designed to grant that kind of change. No use in giving someone more autonomy, when the hierarchical organisation suffocates all initiative. It is like promising an ice cream to a kid standing before a waffle kiosk. But the more fundamental question is: should we all, as experienced commanders of possible devastating military capabilities, not already have that kind of entrusted flexibility? Why motivating people with something that should already be a given?

While thinking on how to realign the organisation, how do we keep motivation high? Real transformers do not depend on external motivation do push things forward. It is their

inner believe that thrives them. But because not everybody has that internal drive, we have to find something. That something is free, but not easy. It comes in the form of a simple appreciation, recognition.

Imagine yourself sitting in your cubicle staring at the defilé of e-mails on your computer screen. Suddenly, you feel the presence of someone standing next to you. You turn around and there stands our COS. Your mind sparks off neutrons in search of a raison why the general is standing there. What did you do wrong? 'Thank you for your excellent point paper'. He shakes your hand and off he goes.

For sure, the next thing you do is nothing. Simply too stunned to fully appreciate what just happened. Maybe a cup of coffee will do the job of reviving you. Your colleagues ask what that just was, and you have to tell the brief instant of surprise again and again. Reinforcing it every time you do so. And reinforcing good things is important on both the emotional, and the neuro-biological level. Guess how long this effect will last (think about the raise)? Hours, days, months? This also works with hard core transformers, because they are humans too. Every time you write a point paper, you will strive to do it even better. And maybe, the next time someone does a great job for you, you will thank him or her. Increasing the effect of this brief, free gesture.

Although free and simple, saying an honest thank-you is not easy. We do it very rarely (and some of us do not even know have to receive one). You really have to mean it and go to the person. And you have to vary the way you do it (a little note, a pad on the back, a coffee …). It is maybe a bridge too far to suggest, as done in the title of this article, to give a hug. Although, the highest decorations in the French armed forces are accompanied by a hug, the so-called 'accolade'. Strange when you see it for the first time, but very powerful. As the YouTube clip demonstrates, you really feel appreciated when somebody hugs you (http://youtu.be/pdxo1mZeY68).

So, when is the last time you hugged your transformer?

The Secrets of Creativity

Van Hoeserlande Patrick

Transformation is not possible without a touch of new ideas. So, when you walk through our headquarters you detect a lot of that. No? Some? A little bit? Well, I guess there will be some of it out there, although much less than what one could expect. Isn't that strange? Why is that?

For one, creativity and military culture are not good friends. It seems that the things we value are counterproductive to creating ideas. Not convinced? Let me take you on a journey through some features of creativity and you will discover why that is. I have not the intention to show you all the secrets of creativity. I'm not sure if I can even do that. But, if you cherish the following secrets, you will be far ahead.

There can only be 1.

I like the movie 'Highander' wherein eternal warriors have to fight each other because there can only be 1. And that one will get the prize. Do I like it because it's about warriors? Or is it because as an officer I go with the 'only 1' theme? As military, we tend to stick to one idea and pursue its success with a superhuman perseverance. We give almost no time to the creation of ideas and we put a lot of effort in keeping an already dead idea alive. But that is not how it works.

To come up with the '1', we need to have many. A good idea is the result of a Darwinian 'survival of the fittest' competition. And the fittest is the result of weeding out the bad and even good ones starting from a big bunch, not the result of mastering the art of CPR for an idea. Quantity is a quality on its own, as the Russians used to claim. Coming up with one good idea is a bad excuse to not try to find better ones.

Ask yourself how would the lightbulb have looked if Edison 'perfected' his first good idea with a military perseverance? By the way, that is an exercise in creativity (see later).

The power of 10.

No, Edison failed more than 1000 times. To use his words, he discovered more than 1000 ways how not to make a light bulb. How many failures are we allowed to make? But failure is an option; no, it is a necessity for creativity.

It is all about math. Finding the 1 is all about the power of 10. To come up with 1 bright idea, you will have to test 10 very good ideas. To find those 10 very good ideas, you will have to explore 100 promising ideas. To find those 100 ideas, you will have to come up with 1000 ideas. One bright idea means 1000 ideas, or 10 to the power of 3. This is not exact, but you get my drift.

When was the last time you formulated 1000 ideas? That long? Most of the time we're happy to propose only 3. What are the chances that one of those 3 is 'the' idea?

The value of an idea has no relation with the rank of the beholder.

Some officers are sitting around a table. The purpose of the meeting is to come up with an idea to solve a problem. After defining the problem, the group starts generating some ideas to tackle it. When some first ideas, nothing out-of-the-ordinary yet, are on the white board, a general enters the room. Without saying much, he looks at the problem definition on the board and immediately formulates an idea to solve it. He asks something and is gone again.

What are the chances that the group will stop generating ideas and immediately accept the ACOS's suggestion as the 1? A near certainty. Why? It is the idea of a high ranking officer, so it must be a good one.

Dead wrong. Creativity does not come with rank. I'm quite certain that it is not on the list of requirements to get promoted. Agreed, generals need to support an idea before it can be turned into reality, but we are not there yet.

So, the owner of an idea is by no means an indication of the quality. Remember even Edison, and the many inventors working for him, came up with more than 1000 stupid ideas for something as common as a light bulb.

The Principle of Uncertainty.

I would take it even one step further. If you can determine whose idea it was, you may be quite certain that it will be a bad one. The best ideas are generated during the most turbulent moments of a session of a heterogeneous group. During such moments you have almost no time to note the ideas themselves, let alone the name of the one who proposed it. During such rare moments of bursts of creativity, members are stealing and developing ideas. Would the so-called owner have come up with the idea not being part of the group? So who's really the owner?

Like the uncertainty principle of Herzberg in quantum mechanics, the higher the quality of an idea, the less we can determine the ownership. Or expressed in another way, the better we can define the owner, the worse the quality.

You don't catch wild horses in the corral.

Somebody explained to me a few months ago that the proposals that leave this HQ must fit inside the framework of policies and directives. I cannot argue against this. However…

A cowboy cannot tame and sell horses that are not inside his corral. But he will never catch them there. He has to take his horse and go out into the wild to catch them. Once caught, he has to bring them home.

We have to do the same thing. We have to venture outside the safety of the framework to hunt for good ideas. Once identified, we have to bring them to our corral.

Think of the box. Yes, the second one.

The policy framework is not the only one limiting our thinking. There is an even greater obstacle, and that is our box. Our own limitations, our internal framework. This one is much harder to leave behind, because most of us are not even aware of it.

Yes, if we were fortunate, we learned some 'out-of-the-box' thinking. Who has said "take away their box and they will create another one"? That other one, the second one, is the one we have to leave behind. We have to jump out of that one. When was the last time you did that?

Conflicts breed creativity.

I know, you know this one. Our study of military history provided us with ample examples of great ideas in time of conflict. If we know this, why aren't we using this to our advantage? Why not create conflict to generate ideas?

If everything is peaceful, if all agree, if all think alike, the stream of ideas will stay dry. Add somebody who thinks completely different. Add people who have no idea what you do. Give someone the task to disagree with the group. Create a conflict. Disrupt homogeneity. Be violent, but fair, in your disagreement. Do not go for a compromise or consensus. Go to war (only a figure of speaking)!

Educate, train and exercise.

Some are born into the art of creativity. Most of us have to learn it. There are techniques that you can master. The more techniques in your toolbox, the better you will be at picking the good ones in a particular situation (yep, the power of 10 applies here too). Educate yourself in those techniques. Train with them and exercise them is real situations. Only then will you get better.

If we all get better at creativity, by the power of 10, some will excel in it and we will be better transformers. Or is that another movie?

<u>Some suggested books to educate yourself in creative techniques</u>

Galindo, J. (2012). *The Power of Thinking Differently: An Imaginative Guide to Creativity, Change and the Discovery of New Ideas*. Los Alto, CA: Hyena Press

Michalko, M. (2006). *Thinkertoys: A Handbook of Creative Thinking Techniques*. Berkley, CA: Ten Speed Press.

The Memory Jogger: A Pocket Guide of Tools for Continuous Improvement (Memory Jogger).

The Moral Courage of Transformational Leadership

Van Hoeserlande Patrick

The mind is a curious thing. Sometimes a simple question triggers a thought process that cannot be stopped. Like a drop of water that hits the surface and creates the well-known ripple effect, an idea may ignite a peaceful brain to send electrical pulses to nerve cells. Once an idea settles in, you cannot un-think it. It is a riddle to the brain that only goes to rest when it is solved or fanned out to satisfaction.

Last December a question from the Swedish representative during the final session of the Chiefs of Transformation Conference in Norfolk was such a spark. His question – to be correct, the one I thought he was asking – was simple, profound and surprising. *What kind of leadership is needed for transformation and do we need moral courage for it?*

After more than 10 years of transformation, the question is surprising. Should the answer not already be there? What has morality to do with transformation? Are there choices in leadership? You see, the question probes deep into the nature of transformation and justifies the use of bio-electricity. I want to share my thoughts on this issue in the hope it sparks your brain cells as well.

The strangest element of the question is the relationship between moral courage and transformation. Let's try to identify that link. In short, transformation is change on a continuous basis without a well-defined purpose, a never-ending spiral towards a moving target. It pulls people out of their comfort zone of well-known routine. Change creates temporary stress, continuous change creates continuous stress. Does a leader have the right to put his people, us, into this situation?

Additionally, most of our leaders are in the HQ for only three years and most of them come here without deep knowledge of, or experience with, transformation. Leading transformation is as new for them as for most of us working here. Think about it: Where could they have learned it besides here in Norfolk? Where did you learn about transformation? So, they have to lead transformation without intimate knowledge and lacking the wished-for experience. They have to learn it too, and they too are only allowed the three-year tour of learning and doing.

What do our leaders have as choices? In a military way, I see three broad options.

Option 1: They can do nothing, or, at most, go with the flow. They can act as if this HQ is just another HQ, and do the work as they always have done: the low effort, low risk approach. The fact that there are almost no SMEs in transformation may give them a nice justification for this option. As the leaders, they cannot ask somebody for advice. The normal way to decide is to ask options and to pick the best one, but that does not work in this case. So, no decisions, no change.

Option 2: They can use their time in the HQ to learn about transformation and try to implement the elements they learn and think they master. Sure, this will help the HQ to move a bit further along the transformational road, but while the leaders are learning, their people just do business as usual. Once the leaders have understood a transformational element, they will want to apply or experiment with it. Unfortunately, their people had not the opportunity to learn about it and wonder what the leaders want. They will faithfully execute their wishes, but missing the understanding, they will not fully support the transformational aspects of it. This results in failure, frustrating the leaders and their people. People on the floor expect change; the leaders, after running through their own learning cycles, want change too, but direct subordinates - middle management - do not understand it and are unwillingly to delay the necessary actions. This phenomenon is known as the 'concrete middle layer'. After three years of learning and experimenting, the next leader will come in and start at zero again. As some of the old group will have understood what the old leader wanted to achieve, they will continue these efforts and hit against the old way of doing things from the fresh, inexperienced leader. The initial transformational wave bounces against the leadership wall. The three-year cycle of replacements results in the bouncing back and forth of waves of one-time changes without resulting in the kind of transformation we should be striving for. Just changing things or complicating procedures does not equal transformation.

Option 3: The leaders accept that they do not know transformation and decide to learn on the go. This means that leaders start walking the path while leading their people. They do not take the time to learn it first, but instead learn it together with all involved.

As a staff officer in Joint Force Trainer, you could expect me to offer a fourth option: to have the leaders learn the basics of transformation before their HQ SACT assignments begin. They could take a one or two week mandatory course about the principles and applications of transformational leadership before arriving at the HQ. This common course would promote a unified purpose throughout upper management and would improve consistency between three-year replacement cycles. This option would perfectly be in line with the NATO Education, Training and Exercise Policy and at least everyone would have the same understanding of the work of transformation.

So why do I not propose this one? Firstly, if there is such a requirement, than the Global Programming Approach should pick it up and define a solution for it. Secondly, this would only educate our leaders – who could do that? – and they would still need moral courage to implement what they have learned during this pre-assignment program. So, this option solves only part of the problem and can only enhance the other options.

Back to my preferred option 3. At a personal level, these leaders are confronted with a whole new situation. They must lead the way into uncharted terrain without a clear path and without good individual preparation. They can ask for good advice, but there is almost nobody who can give it, only opinions and limited personal experience. They will have to make difficult decisions and they will make mistakes. They will need to develop a new kind of leadership style they're not used to. Success is unlikely in the short term and the positive outcome may be very debatable, but failure will be immediately visible. To make things worse, things will go worse in the beginning, giving the impression that the new way leads to complete failure. This could result in an ugly spot on an otherwise perfect career. Should they really accept this unfair challenge? It is so much easier and

safer to just do nothing. Physical courage exposed during a military career is nothing compared to the heaviness of moral courage. Some try to escape this moral challenge by stating that there is no real necessity to transform although this is the HQ's raison d'être.

At a collective level, does a leader have the right to push transformation forward this way? To put people through a turbulent period, every day? Should the leader not protect us and give us the tranquillity of routine work? The decision by nations to have our HQ leading NATO transformation should stop all discussions on the necessity to transform or not. We may not fully understand the motivation – and even doubt it - for that decision, but we have to execute it. People coming to this HQ should clearly understand that they will work in a HQ that is out of the ordinary. If our name HQ Supreme Allied Command Transformation does not give enough information on what to expect, the orientation session in the first weeks should finish the job.

A more stringent reason that urges leaders to walk the path of transformation is that we have to provide our soldiers with the best option in current, and certainly in future operations. We cannot accept something less because we do not like to be disturbed in our daily routine. What kind of HQ hardship justifies the denial of the best for our forces? So they have to lead us, so that we can take care of the future war fighter.

As option 3 is the only one likely to result in real transformation, as the question about moral courage at the collective level is answered. Our leaders should put us through this rapid succession of changes because this is the only way to succeed, and we should expect it. The right moral question is: Do they have the right not to do it?

Back to the question that triggered my writing this article: *What kind of leadership is needed for transformation and do we need moral courage for it?* Transformational leadership, whereby the leaders guide people on an uncertain, ever-changing path through uncharted terrain, requires that these leaders decide every day to challenge old leadership habits, to question all they have learned, to put their people in uncomfortable and unfamiliar situations, and to risk smothering their careers. Surely, this demands moral courage from our leaders.

Where no man has gone before …

Van Hoeserlande Patrick

It must be something of my youth and I have no clue how it influences my choices in life, but I was, and still am, a big fan of the Star Trek series. Sometimes I think that a good work day at our transformational headquarters should start with a voice-over proclaiming:

“Transformation: The final NATO challenge
These are the works of the Headquarters Allied Command Transformation
Its ever-lasting mission
To explore strange, new concepts
To seek out new ideas and new capabilities
To boldly go where no man has gone before.”

For some odd reason, this text did not sound right the moment I wrote it. Sure, I’ve changed some wordings, but the original quote, although very familiar, sounded a bit off. This article took a surprising spin when I, to understand the why, dug deeper into the history of these famous words of the captains of the Enterprises.

I do not believe in coincidence; I prefer the mathematical truth of probabilities, but sometimes this faith is heavily tested. The beginning of March was one of those weeks when all things seemed to merge together into some mysterious plot. Three solicitations to participate in a poll, an article, a challenge and a surprise hidden in the Star Trek quote was probabilistically impossible.

The polls. Three polls, although launched separately from completely different sources somehow got my attention in a span of a few hours. All three were probing my views and feelings on diversity. As I believe in expressing one’s ideas and opinions, I had to participate. The ‘this will only take 10 minutes’ turned into more than an hour.

The article. It was about the Assistant Secretary General (ASG) for Public Diplomacy, Ambassador Kolinda Grabar. Her appointment as the first female ASG in NATO history was placed in the light of the 10 Year Anniversary Report on Gender Balance and Diversity and the corresponding Action Plan. One of the objectives of that plan was raising awareness of gender and diversity issues NATO-wide.

The challenge. In fact two. The Strategic Writing course teacher acts from time-to-time as my editor. On my previous article she did spend some time changing the generic, exclusive references of "he" and "his" to be all inclusive (i.e., not gender specific). These corrections came with two challenges. The first was easy: to avoid the use of "he" and "his" in reference to common nouns in my NATO documents. Easy? The second proved much more difficult: to write an article about avoiding sexism in NATO writing. So, I was not only challenged to ban sexist writing, but also to spread the word. Since HQ SACT is tasked with

transforming NATO, it seems appropriate that the impulse to avoid exclusionary language in NATO documents should come from us. To sharpen the challenge, she asked, “Would this second [challenge] require moral courage?”

All that in one week. Coincidence?

Of course I could delete or ignore the mail. But, it felt like there was no golden bridge to escape to safety. I had to take up the challenge. But considered a member of the offending party, how could I take up the glove and survive the duel?

Why even bother writing gender neutral? Well, I’m all in favour of diversity. I strongly believe that diversity is a precondition for a rich, constructive clash of ideas leading to creativity. Diversity as in different, not alike. Yes, we all have equal rights, but that does not mean that we are equal. I hope not. Diversity must result in a sparkling melting pot of different ideas, cultures, forces, approaches, thinking… It is not a grey, homogeneous bunch of people. No, it is about differences, about heterogeneity, about confrontation in a good sense. And all must feel free to express and confront. All. One group must not be subdued by another.

This means that in our expressions, in our writing we should give everyone equal rights and equal opportunity. If gender and cultural background are not significant, than why stress on it? Easy? Not really. Why? This is more than a language issue; it is a culture issue. Doing and thinking about it questions your cultural foundations. Think about a military leader and you picture a ‘he’ – I wonder if that is also the case with our female colleagues. No problem with that, but it shows our biased views, our internal assumptions. And when we start writing, these slip into our phrasings.

How to overcome this obstacle? Start doing something about it. First: you can read your text while paying attention to gender coloured wording. Second: ask colleagues to read your text. You will make them aware of the issue and their feedback will help you. Third: propose that colleagues read their texts while paying attention to cultural aspects. Only by focusing and acting accordingly may we spark the cultural transformation towards the diversity this HQ longs for.

Being aware is the big thing, but without practical tools we may not be able write in a non-sexist (I prefer “diversity-inspired”) manner and to correct our current writing. This may require practice. Do not get frustrated when the tricks below do not work and that the only solution is to express your ideas in a completely different way. This may even be a good thing, because after rewriting them, your ideas may be better developed.

However, most of the time sexist language can be erased without completely changing the sentence. This can be achieved with the following tools (more are to be found on the internet):

- Tool 1: Try making the subject of your sentence plural. The plural includes both genders, and the sentence may retain its meaning without sounding awkward. Example: ‘As a leader, he has to make decisions’ becomes ‘As leaders, they have to make decisions’.

- Tool 2: Erase sexist language by substituting a pronoun with a noun. Example: ‘He is responsible for managing the HQ’ becomes ‘The general is responsible for managing the HQ’ – you cannot help that you (as most of us) will think ‘the general’ is male, but at least you did not express that sexist thought.
- Tool 3: Use the first or second person when possible. Example: ‘When the leader commands a unit, he must lead by example’ becomes ‘When you as a leader command a unit, you must lead by example’.
- Tool 4: Search for a gender-neutral singular pronoun. Example: ‘After the commander has left, somebody must lead his unit’ becomes ‘After the commander has left, somebody must lead the unit’.
- Tool 5: Some terms are inherently sexist and ignore the female gender in categories that should include both men and women. Often, these terms are the hardest to avoid without making the writing sound strange. However, there are alternatives you can easily find. Example: ‘The firemen rushed towards the burning plane’ becomes ‘The firefighters rushed towards the burning plane’.

Avoiding sexist language is tricky, but far from impossible. The most important thing is the motivation to pay attention to it and to remember that each problem has its own solution. There is no one quick and easy solution; no one right answer. Consider the individual sentence or idea. Consider its context in the work as a whole. Think about your audience. Talk to your colleagues about it. Be assured, the more you practice in eliminating sexist language, the easier it will become to avoid it. This does not mean that you must turn blind to diversity; on the contrary, you will become more aware of it, but you should only make a difference if there is a reason for it.

If you write about a stewardess that brought you a drink during a flight, then you may write this because she really did! But there is no reason to write in an airline SOP that a ‘stewardess’ should serve drinks to passengers, that is done by a ‘flight attendant’.

If we adapt our writing in HQ SACT, maybe one day our military culture will fully and unconsciously embrace diversity. In the long run this change will influence our military leaders, who decide on who gets key positions and ultimately who gets promoted, to look for divergent opinions and not likeminded people. That will be the day when we will find it not normal using the masculine pronoun when referencing NATO leaders. More women will have taken leadership positions in NATO, and Ambassador Kolinda Grabar will no longer be the only female Assistant Secretary General. Will you follow or lead this change?

The surprise. Back to my funny feeling at the beginning of this article. Well, by 1966 – yes, almost 50 years ago – the producers of Star Trek received criticism for the 'no man' part of the speech. By the time ‘Star Trek: The Next Generation’ was aired in 1987 – more than 20 years later - the producers had opted for a more gender inclusive last line. The crews of the Enterprise were not only men, but women too. And as a matter of fact, some were even not human.

“Transformation: To boldly go where no one has gone before …”

Kill Bill's Idea

Van Hoeserlande Patrick

Transformation is all about a continuous creation of ideas for solving challenges and turning the best ones into reality. It would then not be surprising that the ability to sell an idea is key to success. One of the main events in promoting an idea to a big public is to brief. So giving a good briefing should be an art mastered by all who are serious about exploring beyond the limits of the usual. And good briefs are supported by good visual aids. In our current age, it is common to use PowerPoint slides to enhance the perceived value of an idea. Why, then, are we not good at it (to put it mildly)? The briefing starts, the light goes out.

Do not worry; this article is not just another lesson about how to make good slides. I would not dare to waste your time with yet another set of rules for nice slides. That would challenge neither you nor me. Let's turn the story around. Meet Bill.

Bill is a staff officer working in our HQ. He's rather smart and has fun doing his job. He understands that transformation is hard work. The realisation of an idea demands perseverance and resistance to frustration. He feels fine with that as he sees himself as a hard worker rather than a Picasso. However, from time to time he comes up with a bright idea that he sells to all who lend him an ear. I would not call him a PowerPoint ninja, but he knows the software quite well. Templates and animations are no problem. His briefings look better than average. Given the right amount of time and guidance he will set up a briefing that supports his presentation and he will sell his idea to the audience.

Allow me some literary freedom to promote you – unless you're already a branch head of higher – to become Bill's superior, or any other position up his chain of command. Unlike in the movie, your mission is not to kill him – no, this time, if you are willing to accept it, you have to kill Bill's idea without telling him you don't like it. Mission impossible?

Let me help you. There are some easy tricks to kill Bill's idea with his own presentation. These seem so commonplace that he will never suspect any ill will on your part.

The template trick

Provide him with a template that he has to stick to. Just explain that the template follows the house rules for visual identity. And the template does just that. It draws the audience towards the images of the HQ, of Transformation, of the branch… away from the content on the slide. Away from his idea. It places a very big title with less big subtitles on top of the slides and combined with all the other 'need to be on', the master slide leaves little space for the real message. Make sure that the background has a bright, attractive colour so that the focus will be on the slides and not on the speaker. Remember most briefing rooms are rather dark, so Bill will be almost invisible next to a bright screen. The final touch, the coup de grâce: be certain to add the slide number slash total number of slides in the right corner. Make it big. Do not forget to stress the utility of the first, summary, question, and other types of slides, all with small space for actual content. These serve to increase the total number of slides to the level that its revelation will demotivate the public. Who can stay focussed after seeing the first 10 uninteresting slides of a package of 90?

To intensify the negative effect of the template, send it to Bill a few days before his deadline to complete the briefing. A simple e-mail with a friendly reminder that he must not forget to use the template in the attachment will do wonders. The adaptation of his briefing, because you took great care to use non-standard settings, will absorb most of his time, leaving almost none to intelligently adapt the content to this new template.

The hand-out trick

Insist that the briefing should also be usable as handouts. This will limit the use of animation to support the message. A narrative should be present too and complete. You are not able to understand the purpose of a specific slide, if you don't have the corresponding speaker notes. And you want to be sure that the message is right. Don't you?

Written speaker notes are another good way to kill an idea by PowerPoint. After receiving Bill's proposal for the briefing, take extra good care of those notes and make sure you change the style. Change it into something you know that is not Bill. And then insist that the notes are strictly followed. There is no better way to bore an audience than a speaker that reads out loud notes that feels unfamiliar or artificial. If the briefer does not adhere to the narrative, how can you expect a public will adopt the message?

To make sure that Bill delivers the right briefing and that the slides are well prepared, you give him a deadline. Ensure the deadline is set well ahead of the actual brief, so that you have ample time to waste and that he's not allowed to make any last minute changes. Bill will surely reflect on his briefing and the briefing should ideally be adapted to these new insights. Ignoring him the chance for last minutes changes will broaden the distance between him and the slides. A fact his audience will detect and mirror.

The Russian slide trick

Insist that he goes into all the details. Details are immensely important to understand all the nuances. Help him to find those details that at first glance have nothing to do with the idea, but explain to him why they are nevertheless pivotal. It will not only increase your statue as a leader of manager, it will also suffocate his main idea. The ease of adding details and text in PowerPoint demands a strong and experienced briefer to resist. A little push by a superior is all it takes for a staff officer to willingly plunge into the marshes of details, a perfect place to drown the attention of the public.

You also can reach the same effect by shortening the time allotted for the brief while keeping the same aim. Bill will try to run through the slides, and in his effort to finish in time, he will lose his audience. When pressed hard enough, his presentation will turn into a 20-minute hurdle run, killing the interest with every slide he jumps over. Ramming a 50-minute package through a 20-minute time window because you were told just before entering the room, is a sure way to get an idea rejected while thinking you did a good job.

The above mentioned tricks demand some preparation from you as a superior. The next one is brilliant in its simplicity. It is widely used – realty beats the most fantastic stories – and it does not require any work from your side. Give Bill the opportunity to brief his idea. Ask him how much time he thinks he needs, but give him a bit less. After he has prepared the briefing, tell him that it is a very

good one, but don't forget to give him some suggestions to make it even better. Look happy and congratulate him about this good product. As Bill walks out of your office, ask him how many slides he used. Show your worried face and tell him that he has to reduce that number to half, explain to him the 2-minutes-per-slide rule, or come up with another stupid figure. You can use the total number of slides on the template as the excuse to limit the number of slides. Urge him to reduce that number, but stress that he keeps the same level of information and detail.

If played right, Bill will simply reduce the number of slides of the briefing by putting more information per slide. I call this "Russian slides" because I witnessed such briefings and all their slides were crammed with detailed information. Even their Cyrillic writings were less scary than the tsunami of details. The love for details is an inherent part of their Dostojewskian soul. Lover or hater, our short memory capacity does not exceed the number 7 and we can only count to six in a blink of an eye. Forced with an unreasonable limitation on slides, Bill will surely go far beyond these human limits. He will wear out his audience in a few slides. He will start a war of attrition and they will be knocked out before he begins explaining his idea, resulting in an ending filled with apathy. Another idea lying dead on the PowerPoint killing field. Transformation missed another opportunity.

Sure, if Bill was a seasoned PowerPoint ninja, he would have easily circumvented this senseless limitation. With a bit of creative use of the tool, you can condense an attractive briefing onto one slide. Not that this is a useful exercise, but it can be done. Unluckily for Bill, he is not that good.

Epilogue

After his unsuccessful briefing, convince Bill he did his best, but that unfortunately some ideas need time to come to full fruition. It was obviously too soon for this one. You do not want him to be completely disappointed, after all he's a good staff officer.

And do not tell him that:

- Good slides support the presentation and guide the audience through the message.
- Content is much more important than the template. A visual aid should highlight the message, not the visual identity.
- You do not exceed the limit of 6 bits of information per slide. More slides with limited information is better than more information on each slide.
- Titles are nice, but they should not be the eye catcher. A slide must help the audience to focus on the content, your message.
- People should see and feel your connection to your ideas. Do not blind them with a bright screen. The spotlight must be on you, the seller of the ideas.

If you do, he could become a real PowerPoint warrior, hitting the mark every time he shows up in a briefing room.

Neither Chicken, nor Egg

Van Hoeserlande Patrick

Farmer Jan is an avid cyclist[1]. This pastime is not only his daily anti-stress activity because it also gives him a chance to think quietly about his farm. Normally, while biking he finds peace, but not today. Today his nervousness increases with every cycle. It is not going well with his farm and he has no idea how to solve the problem.

A few years ago, he was proud of his chicken farm. Always, when he came home from his bike ride, his faithful dog Sam welcomed him. Sam guarded the terrain and warned him when visitors were on the premises. While his barking friend was getting old, he still did excellent work.

In addition, Pi, his independent cat, greeted him when he came home, even though it was from the roof of the barn. Pi could suddenly appear unexpectedly or sometimes he just walked gracefully between the free-running chickens. However, mostly he slept somewhere in the hay.

Farmer Jan was also proud of his chickens. His chickens were doing what chickens have to do and they, all cackling laid large, flavourful eggs. His eggs - although he had never produced one himself, he regarded them as his eggs - were praised throughout the surrounding area. His chickens were his babies. Even that old chicken, although she laid no more eggs, he allowed to run around in the yard and pick up grains. His colleagues would already have served that old chicken as the main dish. Not him!

His rooster was a real prized animal. Large, graceful and strong. He never laid an egg, but he was part of the happy family.

A farm in perfect harmony. And it made good money for Farmer Jan.

However, that was until a few months ago when Farmer Jan had to conclude that the prices for chicken food were increasing too fast, as well as those for energy. This increase in costs resulted in shrinking profits from selling his eggs, so he decided to freeze the expenses and thus to buy less and less food for his chickens. Farmer Jan noted to his surprise that unlike before, his flock rarely wasted food and the hens were still laying as many eggs as before his budgetary measures. Freezing the expenses, he concluded, was therefore a wise decision.

A blessing in disguise came when, after a good life, Sam went quietly away. A sad event, but the positive side was that Farmer Jan could save on dog food. The presence of Pi was somewhat necessary by the potential presence of rats and mice. A cat was indeed the best remedy against these pests. However, the lazy days of sleeping in hay for Pi

[1] This story is based on a text written by my former boss, COL Jan Lumbeeck, after one of his daily bike rides.

were over. From now on, he was on a diet of less free food. When hungry, he simply had to catch mice.

However, the savings in food proved still not sufficient. After a while, the rooster had to put food to the table. Literally. He, with no added value to the egg production, finished as a main course of the family meal.

Production remained stable and Farmer Jan was satisfied. But only for a short time. The success of his measures, as well as additional rising prices, stimulated him to reduce the amount of food even further. And one more time, and once more, and another one, until he suddenly noticed that the production of eggs was unmistakably declining. Appreciating his former successes, he contributed this decline to the detrimental weather conditions, or to pure chance.

After a few weeks he had to admit that indeed some hens were producing fewer eggs and that this had nothing to do with the weather conditions. Hot or cold, dry or wet ... production was going down. His only conclusion was foul play and bad will by the chickens, so he decided to give them even less to eat. He would teach them a lesson. Fewer eggs, less food. Now he noticed that some of the chickens died. As a result, he had to purchase more new chickens, but he had no money. Farmer Jan then decided to go one step further. A productive life as a chicken was no reason to get a free retirement. No eggs, no food. A simple rule for everyone - almost everyone because Farmer Jan thought that that rule did not apply to him. Older, unproductive hens were still allowed at the farm, but they got no food.

It may seem like the right rule, but even this measure was a failure because it could not compensate for the dying hens. The few new hens he could buy did not survive long, or simply disappeared. As for his profits, those were non-existent and, moreover, the production had shrunk to its lowest level. He did not even touch the production levels of the old days. The question whether it would be better to stop farming was floating around in his head. He was in doubt, because if he stopped, he would never get back his investments. On the other hand, if he would buy a bunch of new, more productive chickens, he was not sure about the return on investment. On top of that, the new ones might not stay alive long enough.

Misery! Just more savings looked like the only way out. That was indeed the miracle solution a few months ago. So why not now? More savings was the final decision of Farmer Jan that day as he stepped off his bike and was greeted by neither Sam, nor Pi, nor his chickens...

However, someone did greet him: he came across his neighbour, also a chicken farmer. His neighbour saw immediately that something was out-of-the-ordinary. Jan was always in a good mood, but not this time.

Unlike our Farmer Jan, the neighbour-farmer had not made any rash savings, but had considered his farm as one complete, interconnected system. Dogs, cats, roosters and chickens, even the farmer himself, were all inextricably linked in the achievement of a healthy egg production. Take away one link and the full capacity would fall apart. It was

therefore an art to maintain a balance, and yet to survive in a changing environment. Although more difficult than simply applying budgetary measures, in the mind of the neighbour, there was no other way.

A dog keeps the fox and other predators away. Overnight, a well-fed and healthy cat catches mice and rats that are otherwise stealing fresh eggs and the food for the chickens. A rooster ensures a fair distribution of the food so that the hens do not hurt each other in fights over food and he helps keep the hens healthy. The older, 'non-productive' hens clean up wasted food and other kinds of waste, preventing outbreaks of disease and the attraction of pests. Finally, the farmer ensures harmony and management. The whole system and everyone in it takes care that the hens can do what they should do in a peaceful environment.

Therefore, even as the dog, cat, rooster… and farmer do not produce any eggs, they are necessary for a good production. Everything must be in balance. And had Farmer Jan, after observing the significant decline in egg production, decided to increase the amount of food, he would, by gradually increasing the amount, be able to determine the point when food (input) and egg production (output) are optimal and most profitable. The body of a chicken stops automatically producing eggs for lack of food, but that does not mean that the chicken dies[2].

[2] Employees stop working for lack of motivation, but that does not mean that they will leave the organisation.

Social Media Transformation

Van Hoeserlande Patrick

A few months ago, I started writing for the HQ blog not because I like blogging – to be honest, I have no warm feeling for this type of social medium – but because I was unpleasantly surprised to discover almost nothing about transformation on it. I felt like a traveller through a desert arriving at an oasis only to find that there is no water. Instead of complaining, I started to dig for water. I did not find it yet because more than 10 articles later I cannot speak of a success story. Why?

The first question that comes to my mind is the definition of success. How will I recognize it? Is success measured by the number of comments? The number of likes – where is that button? The number of colleagues telling me, almost by accident, that they had read the blog? The number of informal discussions in relation to the topics in the articles – how to count? What if only one sentence in all my articles leads to a successful transformational action? Can I call that a success? I do not know. The only thing I cling to in an almost dogmatic way is my experience that it takes about 18 months for the feedback loop to ignite in a unforced approach of information exchange. But what will closing this loop look like?

Yes, there are some brave souls who dared to comment. Hope? But hope is not a method, and those scarce comments are hardly enough to start a multiple way communication stream. Or are they not brave, but just the few active on our social media? If so, why is that? Or do they represent the active top of the iceberg?

The Public Affairs office running the blog was convinced that this lack of interaction was due to the outdated tool supporting the blog. Yes, it was not easy to publish an article, but replying to it was not hard at all. Just hit the comment button and wrote what you thought. Nevertheless, they strongly believed that a better, sexier software tool would increase the utilisation of social media within the HQ. That is why they have hard-pressed on the release of the new tool, called ‘ACT Connect’. Didn’t you detect the change?

I believe they are wrong. A technologic improvement without a thorough understanding of the cultural environment wherein it is released rarely solves problems. More technology, more of the same, does not solve problems if the cause is not addressed. A new, untargeted change does not equal an improvement. And not every problem can or should be solved with technology.

But, then again, they may be right. Who could have predicted the effects of social media on the world population – what was the problem it tried to solve? A recent study of the millennium generation by our colleague Dr. John Kelley – contact him if you want to read it - clearly indicates that the introduction of information technology has a similar impact on the whole generation of youngsters, whatever their cultural background, wherever they live. And it is the technology that makes them equal, because where they lack those tools, this equalisation does not take place. Are we evolving towards a real global civilisation with a common cultural foundation based on accessibility to modern information technology? Technology as the ultimate equalizer? Who dares to predict the impact of the yet-to-be-invented changes on the yet-to-be-born generations? Do you?

And what about the impact on the military of all that technology? Will wars be fought and won on the internet? War is all about the mind and souls of the people and if future generations are similarly influenced by social media, would we then not expect to see virtual battles for those social connections? And what will such a battle look like? If all are culturally equal, how then to attack the enemy without hurting ourselves? Mao's fish in the water approach in the virtual world. This must surely be more than a simple extension of strategic communication. What would happen if an army of internauts hits in full force (a part of) the world population? What would be the consequences of Facebook, Tweeter, or Wikipedia suddenly becoming weapons of mass disinformation? How can we prepare ourselves for such a scenario?

Every soldier learns to handle a rifle during basic training. It goes without saying that every soldier must be able to riposte any direct attack. In an organised way, every unit must be able to defend itself and safeguard its mission. We don't even think about that. It is a lesson our history of wars taught us, over and over again.

But in regard to attacks via social media, we're armed with nothing more than pocket knives and not sure how to use them. Yes, technology will change the world, but it does that through the new generations. Our young soldiers are expert users, but our commanders aren't. Should we not all be as good with social media as we are with a rifle? Practising the use of social media should be as normal as going to a shooting range.

Should staff officers not be motivated to practise in a safe environment? Educated and trained in the use of modern, social technology? Not only to better understand and communicate with our young soldiers born in the computer age and having no idea how we survived without laptop, PlayStation or smartphone, but also because it could be the preferred weapon on the next battlefield. The battle for the narrative cannot be won by a small expert group. Ships, jets and tanks will not stop the flow of information attack.

Can a well-used internal social media like an internal blog serve as a virtual shooting range? Can it serve as the experimenting basis for our social transformation?

The Kingdom of the Grey Mice (part 2) - The Exploitation of the Mines

Van Hoeserlande Patrick

On our known island[1] somewhere isolated in the Pacific lives our special species of mouse. All mice on that island are born pink, but while growing up they change colour: some turn grey, others black. Although the cause of the colour shift is not yet known, biologists observed a distinct difference in behaviour.

You can rarely notice a grey mouse because he slips away at the slightest sign of danger. He manages his nest like clockwork and is a model of calm and control. The black mouse, you do not have to look for him. Wherever you go, you feel his presence. He's personally involved in everything he does. In his nest, the mice are very driven. They are, as it were, inspired and committed in order to achieve something. The nest is usually located at the borders of a colony and is a hive of vibrant passion.

A while ago, the group of biologists could observe a unique event. It began rather accidentally when a biologist saw a black mouse rooting in the ground. Out of scientific curiosity, the biologist continued to study the behaviour of the mouse. The rodent was apparently digging for a while because there was already a small tunnel noticeable. What followed was an opportunity to better understand the species.

Our mice seem to be fond of a tuber that grows deep underground. The black mice were the first to discover this. Given their typical behaviour, the biologists were not surprised that they were the first. However, digging up tubers proofed difficult. First, you must know how to find them. Somehow the black mice were very proficient at this. Most tunnels led almost in a direct line to a tuber. The quasi absence of twists or turns gave the biologists the impression that the mice could smell the roots. Secondly, there were great risks: local water bubbles could flood the tunnels and lead to the drowning of the digging mouse, the walls may collapse, etc.

The mining of the tuber was, certainly in the beginning, a very adventurous enterprise - just the thing for a black mouse. No wonder that the first tunnels were dug by them.

The flavour of the tuber was so delicious that it wasn't long before the grey mice also went to work. After all, the tuber was not only tasty but also very nutritious. It was possible to feed a large mouse colony without the risk of a food shortage during winter. The efficient operations of the grey rodents would make sure of that!

They convinced a number of black mice to introduce their grey counterparts to the art of mining. It soon appeared that grey mice could dig well, but they were very poor at finding tubers. This problem

[1] See the "Article 04 - The Kingdom of the Grey Mice".

was quickly resolved by giving black mice access to the tunnels so that they could point towards the tubers. By regularly visiting the diggers, the black mice could adjust the direction of the tunnels. While this resulted in winding corridors with frequent sharp turns, the tubers were found.

Unfortunately, the grey mice dug without paying attention, which resulted occasionally in flooded tunnels. In the meantime, a grey mouse had climbed to the post of overall manager because the few black mice were busy directing the diggers to the tubers. This grey management mouse sought a solution for the flooding. Now it turned out that certain grey mice had an eye for safety. The grey management mouse selected safety mice that occasionally had to walk through the corridor and decide whether further digging was safe or not.

This resulted in tunnels with digger mice, black pointer mice and grey safety mice at the same time. This led to an entanglement of animals and it looked like a mess. Coordination was urgently needed! So, from that day on there was a coordination mouse at every entrance of a tunnel. They had to make sure that there were at most 2 mice in a tunnel: a digger mouse and another type of mouse.

Everything went smoothly. They harvested many tubers and the colony feasted on them. The demand for tubers increased and so the production had to follow. This meant more pointer mice, but there were too few black mice employed in the mining business to accomplish this. The black mice that were not employed by the grey mice were not interested in a job in the colony enterprise because they loved exploring their own small, expeditionary mines. Therefore, the manager decided to train some grey mice as pointer mice. This should be possible provided a good training program with black mice as teachers. He gathered a group of volunteer mice and selected the best candidates. The black mice were pulled away from the tunnels and replaced by trained pointer mice. Although this programme resulted in even more bends and longer corridors, tubers were found and excavated.

The practice of digger mice dragging a found tuber to the entrance of a tunnel demanded a lot of time. Time was certainly wasted because most digger mice were slow and the tunnels long.

This problem was efficiently tackled. The manager selected some fast runner mice and gave them the job of bringing the tubers to the surface. This change made the coordination at the entrance harder, but more coordination mice also solved that. Meanwhile, the selection of suitable mice for specific jobs was in the hands of a select group of selector mice and the trainer mice group was extensive. Black mice became an endangered minority because the rare candidates were all refused. Their pioneering spirit did not fit with the structured world of grey mice. And besides, they were no longer needed.

The mine was an example of efficiency. All work was carried out in optimal conditions. The mining enterprise was the main employer of the colony. The manager saw that everything was good.

And yet ...

During his inspection tour, the management mouse saw tubers everywhere. Some tubers were not optimally stored. Guard mice were looking agitated at the whole mess, unable to position themselves to oversee all the products. If all the tubers would be gathered in one place, their

preservation would be better controlled and the guards would have a better overview. The plan was put in place. Another problem solved efficiently.

At the eve of the first winter, a food shortage issue became apparent. The management mouse in full anger appointed a control mouse who later revealed that some coordinator mice were employed at empty tunnels, some runner mice did not know what to do ... The remedy was simple: a more centralised control of the enterprise. All information had to be forwarded to a special guidance cell that had to analyse it and adjust the operations. The result was immediate: coordinator mice were only sent towards active tunnels, runner mice were only where they were needed, the group trainer mice was reinforced so that everyone could be trained and retrained on time, ...

And then the famine hit ...

What did the biologists observe? The digger mice in the large mine were barely digging anymore. If they were digging at all, the direction to dig was not clear. It seemed that finding a tuber was more a matter of luck than of targeted work. Why did they not dig? First, they had to have access to the tunnel. If there was no coordinator mouse, they could not go in. If they were inside and reached the end of the tunnel, they had to wait for a pointer mouse. If that took too long, they had to find a runner mouse so that they could send a message that they were waiting. Over and over again, the runner mouse had to explain to a coordinator mouse why he came out of a tunnel without dragging a tuber. The runner mouse had to deliver the message to the guidance cell and then wait until he knew what would happen. If the pointer mouse finally indicated the right direction, the safety mouse had to give its approval. Again waiting (the few who started on their own initiative without following the whole procedure were re-trained because they apparently did not understand the procedure). For this, the runner mouse had to leave the tunnel, leaving the digger mouse without work and without news. After approval of the safety mouse, the digger mouse was allowed to start digging, but occasionally he had to ask confirmation of the direction. After all, deviating from the right heading meant losing effort and time, and thus was not efficient. If a digger mouse took too long to reach a tuber, he was sent to a retraining session. During this retraining he was taught how to dig better and faster. Everybody had to be professional so that it all fit together like an oiled machine.

But despite all these improvements, the number of tubers per mouse was in constant decline and hunger hit hard.

…

Far from this large mining enterprise were small groups of grey and black mice working together. Their family members knew no hunger.

Explain by Example

Van Hoeserlande Patrick

As far as I'm aware, and I must admit to not reading all the articles on CONNECT, there is only one article that is directly a result of the first speech of SACT (SACT's All Hands Call). That article under the title '*Distinctive abilities not "capacity"*' goes deeper into the proposal to change the word 'Capacity'. If you did not read it, do so.

Another topic touched during his speech sounded strange to me when I heard it. Mentally noted, I laid it aside for later consideration. That later was much sooner than I anticipated and came in the form of a book with the title *Made to Stick*.[1] In that book the authors describe how you can communicate an idea that sticks like Velcro in the memory of your audience. This is a topic that goes beyond the intent of this article but it is nevertheless very interesting for us. The book (which should be on the HQ SACT reading list) also explains the value of examples. Let's explore that topic by conducting an experiment.

Question: How many songs will your neighbour guess when you tap the rhythm of 5 songs?

Answer: 1, maybe 2, certainly less than your total number of songs.

Not convinced? Grab your colleague and do the experiment. It only takes 5 minutes and it is lots of fun!

Why is that? Well as the' tapper' you tap the rhythm while you play the songs in your head. It all makes perfect sense; your tapping really is in synch with the melody of the songs. Unfortunately, your neighbour, the 'listener', only hears the tapping, not the melody in your head. Missing that piece of information, your neighbour tries to match a melody. Suddenly, your flawless effort to tap 'Happy Birthday' becomes 'Jingles Bells'. This phenomenon is called the 'Curse of Knowledge'.

An example: during your first weeks in the HQ, your branch head drops by your cubicle and advices you to not limit the transformation of a concept to one line of development of DOTMLPFI. Clear? He leaves you clueless as to what that meant. But for him, after 2 years at HQ this makes perfect sense.

Your colleague, reading the question marks in your eyes, turns towards you and explains that for your study to minimize the effects of mines, you should not limit yourself to defining a better mine disposal system (material), but also think of another way to do it (doctrine) or to train soldiers to be aware of the dangers of mines (training). Isn't that clearer?

Like the branch head, we are all under the spell of the curse. After months of studying an issue, we become an expert on the topic. We understand every little detail, its relationships and importance to the whole issue. Concept development, global programming, and transformation all make complete sense after a while. When explaining those abstract concepts to others, we provide them with a definition loaded with more abstractness and every nuance important to catch it all. Sometimes we

[1] Chip Heath & Dan Heath, *Made to Stick. Why Some Ideas Survive and Others Die*. Random House Inc, New York, USA, 2008.

even add a touch of fluffiness to enhance consensus building further up the chain. The result is a complete and near perfect explanation of what we mean. Right?

No. The listener in our experiment, our audience does not hear the music in our head. We explain concepts as if the audience is us: the tappers. Why do they think we are tapping 'Jingles Bells'?

How to prevent the effect of the curse? Well, by singing while tapping. By being concrete in explaining abstract concepts. And examples are a good and natural way to do just that (We can do even better by telling stories, but that's a different story). Don't be afraid, you can never be too concrete. Not even for a general. Talking abstract may grant you the status of an expert, but painting with examples will elevate you to the level of genius.

I could have started this article with the definition of the 'Curse of Knowledge', but I bet that after the experiment (even if you did not do it) the idea stuck better. The use of the example made it more concrete and that is what our Supreme Commander expects us to do. We should refrain from stupefying our counterparts and aim for concreteness. Explain by example.

Why Cyber Does Not Make Military Sense

Van Hoeserlande Patrick

Information technology is part of our daily lives. Apart from some isolated communities, every household has some machine with a chip in it, and this evolution will continue. The Millenniums, however you define them, do not know a world without it. Working in an office means without a doubt spending some time on a computer. No writer should waste words on the obvious statement that cyber connects or will connect everything.

Less obvious is our role as military in this virtual world. There is lots of talk about the need to get rid of the limitation to Cyber Defence and to engage in a more offensive role. We should even consider cyber as a new domain next to space, air, land and sea. There are good arguments supporting this approach, as there are equally convincing ones against it. I think that the discussion on the cyber domain is useless, because others decided that already for us. However you approach the military side of cyber, it is there and we need to consider it seriously.

As a domain, cyber will for sure compete for resources. Being militarily prepared for battle in the cyber domain will not come cheap. If you think that cyber soldiers are highly intelligent hackers with some fancy DIY equipment, think again. This is like thinking that a land army is nothing more than a bunch of ill-trained, but highly motived, terrorists with an AK-47. Nope. A cyber army will require investments in training and material equal to those for air and space. But, that is not the main reason why cyber does not make sense.

Bunkers were magnificent defence measures against the lethality of arms like rifles and guns. If you want to protect people, you just encapsulate them in reinforced concrete and add a strict access control to it. Nobody gets in without you scrutinizing them. Great!

That is our model for Cyber Defence: you protect your network against intruders and with a firewall you control the in- and outward flow of data. Like in the old days of competition between the offense and the defence, you have to update your defences with the latest building material because the weapons are getting better. Anyhow, with the right – any idea where that threshold is? – amount of investments, you feel safe, protected.

But the comparison with a bunker is wrong. You're not safe at all. A bunker is worthless if you may not shoot at an approaching enemy, if your guard may not use force to prevent unauthorised entry. Outside a bunker, you have to patrol to see movements and to get timely warning of a pending attack. You cannot sit and wait until you're surprised by an attack.

But it does not stop there. Your cyber bunker is built with components and software potentially developed by your enemy. There may be malware imbedded in some components that can be activated by a simple command. You may think you control the gate, but the other side has the key to a backdoor, maybe even more than one back door. How safe do you feel in the kind of defensive work where the enemy can walk in whenever they wish, without you knowing it?

Of course you can cut all connections to the outer world, but what use will your network have then? A command and control system is worthless if it cannot order combat elements into action. And even in complete isolation there is no guarantee that an infected component part of the whole system will not disrupt the function of your network.

So a purely defensive posture is just a nice façade and gives you a false feeling of safety, but it will not stop a cunning enemy. If you think this is an argument pro cyber offensive, than you're mistaken. Why is shooting back not the solution for a failing defence?

A cyber warrior, i.e. a cyber terrorist or any group with an offensive strategy, picks the moment and the target of the attack. In this discussion I consider hackers a nuisance as they do not have the intention to do physical damage, they can disrupt or manipulate data, but their intention is not to kill people. Killing people with cyberattacks?

As the effects of cyberattacks are not limited to the network, so our reactions must not be either. The consequences of a cyberattack can leave the cyber domain and enter others. What would be the effect of taking over the cooling system of a nuclear plant? What could happen if the pumps and valves of pipelines were out of control? How about a ship entering a port at full speed? Some changes in the Air Traffic Control information maybe? Our cyber enemies can pick their targets, study defences and attack when ready. Just like a 'conventional' terrorist can select a target, recon it and hit it when ready.

But we do not have this advantage. We do not know who our enemies are. We certainly do not know where to hit them, and the luxury of deciding on the attack moment is not ours either. So we have to train and plan on some, possibly high tech, unknown other. We can try to penetrate some systems, but never 'theirs'. Cyber warriors can study targets and even build a similar system to test some approaches. They can even try to penetrate the live target and prepare for attacks. Plant cyber mines. We cannot. We are not allowed to infiltrate a network as part of prudent planning.

And remember we're working from a bunker made of components built by the other side. Our cyber weapons may be infected and telling more about us to them then we know. Soldiers do not go to war with weapons controlled by the ones they attack. Why do we accept this in cyber warfare?

And we have not considered questions in the legal or moral field when taking the initiative in the cyber domain. Or what about collateral damage? How about attacking civil nerve centres? How well could we live with a virus aimed at blocking the locks of a harbour that accidently sabotages the plant control software of the petrochemical industry? We have not mastered the art of cyber warfare enough to talk about surgical 'bombing' operations.

If we cannot defend ourselves and we're not able to take the offensive - unless your nation has the money and a clearly defined enemy - are we at the mercy of whoever wants to attack us?

The answer is 'no'. But, we cannot respond to the threat as military alone. We can stop air, land, naval and even space forces alone, but we cannot do this in cyber. In this aspect it is much like biochemical warfare. That is another reason why it should be labelled a domain. We have to join forces and go for a comprehensive approach.

It may be too early to list all measures to take in order to get a real defence against cyber warfare. But we should start thinking about constructing our proper building blocks for our 'bunker'. We should render the hidden keys useless by installing our own back doors. Our bunker may be less cosy and more expensive, but at least we can concentrate on real access control at the front door without unlocked back doors. We could start producing the digital bow and arrow, simple weapons not controlled by the other side. Planning for joined answers to cyberattacks (i.e. resilience) may be another thing to consider.

Of course, this approach needs further thinking or may even force some to attack us before we're successful in negating all possibilities. But without profound reflection, cyber warfare does not make sense.

Ready for Another Domain?

Van Hoeserlande Patrick

The reader who expects to read an argument in favour of the creation of a separate cyber domain will be disappointed. I already have argued in favour of this in my previous article. Cyber as a domain is a non-discussion. The question that I want to answer in this edition is if we need more domains to cover the whole scope of warfare. Instead of adding a domain every time we feel the urge to do so, should we not better reflect on defining a complete set of domains? Is being pro-active not part of being transformational?

Adding domains? For historical reasons we know four domains: Land, Sea (or Maritime), Air and Space. The order is not accidental but inspired by the time in which they became a domain. The Land domain was the first battle space where humans decided their conflicts -- if you doubt this, go see the movie '2001: A Space Odyssey'. The first battle on land probably occurred some hundred thousand years ago. Later, about 1210 BC, Suppiluliuma II, king of the Hittites, defeated a fleet from Cyprus and burned their ships at sea. With this event, the Maritime domain became the next one. Only some hundred years ago on 5 October 1914, the French pilot Louis Quenault opened fire on a German aircraft with a machine gun for the first time, an event that gave birth to Air as the third domain. Likewise, the launch on 4 October 1957 of the first artificial satellite, Sputnik 1, opened the door to Space, which quickly turned into a new domain. Now, almost 25 years after the creation of the internet, number 5, the Cyber domain, is born.

Looking at history, four observations hit me. First, the time between the creation of consecutive domains shortens. Second, it takes us, the military, awhile after the initiating event (e.g. first aerial duel, first satellite launch) to acknowledge a new domain. Third, the last two domains were formulated from within the Air domain. Fourth, contrary to Air, the Deep Sea as a three-dimensional environment is not considered as a domain on its own.

Can we learn something from the above-mentioned observations concerning potential new domains? Let us explore.

Why do we need a domain? The acknowledgement of a domain opens the doors for the development of a specific theory, strategy and doctrine. It creates the opportunity to focus resources for the projection of power in that specific domain without being subordinate to a parent domain. Of course, it also puts a new competitor for those resources in the field. Although these are advantages for creating a domain, they can hardly be used to identify new domains.

What makes a domain a domain? The first characteristic of a domain is the specific medium (or environment) it uses. For example, Land uses ground surfaces, and Air uses the three dimensions of the air above. A second but related characteristic is the principal vector used in that domain. For example, Land uses troops on foot or in vehicles, and Cyber uses software applications.

It is clear that the domains may affect each other. Aircrafts can destroy land targets, while Surface Based Air Defence (SBAD) is a menace to them. By considering separate domains, we can optimize the specific warfare, but it is by joining those types that we can truly optimize military power.

As already stated, Maritime as single domain seems unnatural. Ships use the sea surface, while submarines use the three dimensions of the oceans much like airplanes in the sky. For the sake of the discussion, I'll consider the Deep Sea as a separate domain, considering 18 October 1914, the day the German U-27 sank the HMS E3 in the first ever successful attack on one submarine by another.

By doing this, I completed the table with the current domains below.

Domain	Date initiating event	Medium	Principal Vector	Civilian Interest
Land	<100,000 BC	Land surface	Foot soldier / Vehicle	Commercial / Habitat
Maritime	1210 BC	Sea surface	Ship	Commercial
Deep Sea	1914	Deep sea	Submarine	Neglected
Air	1914	Air	Aircraft / Missile	Commercial
Space	1957	Space around earth	Satellite	Communication / Applications
Cyber	1989	Internet	Software	Applications

There must be a reason why the Deep Sea is not considered a domain. It is my opinion that the reason lies with the inability of this domain to directly influence civil activities, for the simple fact that there is almost no commercial interest. As long as this is the case, the Deep Sea will stay a subset of the Maritime domain.

In short: a domain is an area of military warfare characterized by unique vectors moving in a specific medium which has direct and important civilian interests, and as a consequence can project power in its own as well as other domains.

Armed with this definition, I went to look for new domains and came up with the following list:

Domain	Medium	Principal Vector	Civilian Interest
Human	People	Information	Cultural/Commercial
Outer Space	Space beyond Earth's gravity	Spacecraft	Not yet
Environment	Environment	Bio-Chemical agent	Commercial
Electromagnetic	EM Spectrum	EM emissions system	Commercial

Three of the potential domains (i.e. Human, Environment and Electromagnetic) are not considered as such today, although they are all wholly or partially the subject of specific doctrines. Maybe we missed the signals for creating a specific domain for them? Should we correct this?

Together with the Deep Sea, Outer Space is a future candidate. I'm still undecided if 'Star Trek' or 'Atlantis' will win the competition for the next domain nomination.

Did I miss a domain?

How to conquer a nation in 20 years?

Van Hoeserlande Patrick

This article comes with a double warning. First: it is not complete and its content is highly debatable. So there is a risk that you will start to think about the topic. My intent was not to finish this topic, but, in the spirit of the ThinkBox series, to ignite a debate. Anyhow, the topic is just too vast to cover in a few pages. Second: it may entice your darkest thoughts about waging wars. That is what it did to me. The more I thought about it, the darker the scenarios.

Now that you've been warned and did not stop reading, let's start.

Setting

You're the (military) leader of a big nation with an expanding population next to some countries that look promising as extra living space.

Question

How to conquer the needed, extra land?

The plan of attack

The sentence above could be the introduction of a nice setting for a planning exercise that most military will solve by devising some great plan to invade one or more of the weaker neighbouring countries. The preparation of the attack will be done swiftly and under concealment as to not spoil the surprise. The whole plan spans only a period of a few weeks, months at the most. Aggressive and quick.

In the execution, the surprise will never be as good as planned. Modern technology will soon pick up troop movements and spoil, at least part of, the surprise. Speeding things up will only increase the likelihood of detection. Even when the surprise is complete and the run-over a military success, a long and difficult period of keeping peace and order will follow, unless total annihilation was part of the plan. In the end, even a well-executed master plan of attack will take years to bring the needed extra land home.

What if you had to do it very slowly?

What if you were forced to take your time to conquer the neighbours? Say, your plan has to span the time it would take to conquer that country by military force followed by the long period to control it? Say, your invasion must take 20 years; how would you plan it?

First, the assumption of an assured long-term overall political control of the war effort, well-hidden in the above 'quick' military solution, surfaces. Without the continued determination to win, no nation will be conquered, fast or slow.

While we, supported by technology, are good at picking up fast moving things, we're bad at detecting slow evolutions. Especially if that change comes barely above the noise level. Can we conquer a nation at a speed that is too slow to detect?

This is not new. Mother Nature is one big, slow battlefield, every day, all day long. Darwin detected these fierce battles in the lives of plants and animals. His ground-breaking rule 'survival of the fittest' was a direct result of this observation. But did you see how that one tree conquered a big piece of its environment while in the meantime killing hundreds of seedlings? I bet you did not.

What if war has not Clausewitz' nature of a "continuation of policy by other means"? Not a continuation of political interactions carried in a different way? What if politics equals war? Total, unrestricted war with all means available. All means: demographical, political, financial, technological, economical, security … and military. A total war in its fullest sense. Wherein all the means are not to support the military effort, but for war. Jointness nec plus ultra.

But at a slow pace. A war so slow that you hardly notice it, the opposite of the Blitzkrieg. A war so slow that those waging it can deny it is actually happening. All that happens is covered by the fog of war. But rest assured, the end result can be as brutal as the fast variant: 'annihilation' of the enemy.

Don't be naive. A Slow War can be detected by revealing the big pattern over time. If you could play the seemingly isolated events of a Slow War in sped-up time, its real nature would be visible. But that nature is so fuzzy that it will look like some strange, farfetched complot theory. Even if identified as a Slow War, it will be hard to get a general acceptance big enough to mobilize and to unite the 'forces' necessary to counter the war.

Some principles

It is too soon to come up with a complete list of principles for this kind of war. And it will be hard to come up with a list based on real life experience, as it is almost certain that where there were such wars in the past, it will be hard to positively identify them. Nevertheless, let me try it:

Unity of Command

This principle of the fast, conventional type of warfare, 'unity of command', stays important in the slower version. All efforts have to be directed to the common goal, or at least so turned around that they do. The biggest challenge is that this unity of command over all means must be sustainable during a long period.

Creativity

A surprising principle, but very necessary. Certainly, at the strategic level it is necessary to come up with new approaches that are outside the box of the adversaries and their allies (and of the rest of the world for that matter). An indirect approach at low speed needs a creative brain backed-up by

tenacity and a clear goal. Every action must be carefully thought through, as everything must stay deniable.

Communication

Denying actions not only depends on their nature, but also on the ability to convince others. Good communications are critical to thicken the fog that hide the actions. You excel at it when you're able to accuse your enemy of doing what you are doing. Even if the other side does not fall into your traps, you must exploit their doing so, real or imaginary.

Patience

A slow conquest tomorrow is better than a fast one today. Do not rush towards your goal. Even if there are some drawbacks. Speed is NOT of the essence, patience is!

Three phases

Taking it slowly does not mean that there is no need for a master plan guiding the execution. The plan may not look like a military campaign on a map; it may even be wise to never put it on paper to leave no trace. Nevertheless, I think that such a campaign will evolve around three phases.

Phase 1: Infiltration

Mao Tse Tung declared that in the revolutionary war the people are the sea wherein the revolution moves safely. The purpose of a Slow War is not to swim like a fish in the sea but to replace the fresh water of a lake by spilling small drops of salt water into it. The infiltration must be done on all levels of power. This can be achieved by helping the other side financially, intellectually, socially … and making sure that help is accompanied by people on the ground. Humanitarian aid after a disaster while leaving some of the support team behind to stay is a great way towards this goal.

But not only good and nice people may be used for this purpose, terrorists and common criminals may also become handy. They are not only small drops but can be used later as an excuse to send police and military forces in an effort to aid the country in restoring law and order. Troops that will tend to stay.

Phase 2: Destabilisation and Protection

Once there is enough salt water in the lake, the next phase can start.

This is most probably done at different times in different places as it is highly unlikely that the infiltration will be equally successful.

People have a natural tendency to stick together along ethnic lines. This tendency is used to create concentrations by buying houses and reselling them to certain ethnic groups. These concentrations are an ideal hiding place for criminals and terrorists. They in turn can be used to foster insecurity amongst the indigenous population that turns to you for protection.

As the assailant, you can offer help in case of disaster or unrest, even if you're causing it, although in a deniable way. The efforts are multifaceted, camouflaged attempts to cultivate support in the general population, often while undermining the local regime.

The ethnic groups favourable to the cause can be further enlarged by stimulated emigration over fluid borders, a higher birth rate, and demands for reuniting families …

Phase 3: Consolidation

Salt water has replaced fresh water in some areas.

In the final phase the idea is to consolidate big concentrations by linking small concentrations of favourable ethnic groups and rendering integration difficult through deepening differences. By linking the smaller concentrations and chasing the locals away from the links, bigger concentrations can be formed. These concentrated groups will feel isolated and discriminated, and start asking for their political rights. If well prepared, most of their demands will be satisfied. This will make the movement stronger. If not accommodated, you can use this as proof of discrimination.

If strong enough, a cry for independence backed up by the assailant willing to protect the ethnical related groups will open the door for annexation, the final goal.

The use of all powers

More than in conventional war, Slow War demands the application of all powers. The powers of a nation are sometimes summarized by the acronym 'midlife': military, informational, diplomatic, law enforcement, intelligence, financial, and economic (e. g. agriculture, energy). I would like to add politics, population, education, technology, environment, and ideology to that list. Some sources of power cannot be used in a conventional manner or are of great value in specific phases.

For inspirational purposes, below are some examples for the use of these powers.

Politics

As the assailant, you can applaud members of favourable ethnic groups as loyal citizens of the other country by spotlighting their voting record. This of course has to be preceded by stimulating those groups to vote. If voting is not permitted, you can show this discrimination to the world and demand the right to vote for those discriminated groups.

By organising block voting, the attacker can nominate persons to political office to bring about favourable legislation toward and in support of potential sympathizers. Some groups with deniable links can send intimidating messages and messengers to the outspoken individuals who are critical and seek to eliminate them by hook or crook. There can be a war of words using local leaders.

Political aggression may further include aggressive tactics like assassination, paramilitary activity, sabotage, coup d'état, insurgency, revolution, guerrilla warfare, and civil war, but these tools should be used as last resort only.

Military

The nature of military power makes it not very useful for Slow War, except in a supporting role and in the third phase. Armed forces are just too visible and linked to the central government to be deniable. A conceived threat may be useful, but only if the threat is believable without the risk of being dragged into open conflict. Individuals or small teams can be used under the cloak of 'ordinary crime' or terrorism. But the link to the military should always be deniable.

Informational

You have to make sure your 'people' has a face for the other side. It is hard to fight people you know well. Celebrities build up good will and credibility, things that can be used. They must engage the public in dialogues, discussions, debates in colleges, universities, public libraries, radio, TV … They must not be shy to engage in exchange, but have to remember to not try to win and to be non-aggressive, certainly in the first phases.

Showing faces is just the beginning. Start taking control of as much of the press, TV, radio and the Internet as possible by buying the related corporations or a controlling stock. Create new businesses in the world of information and entertainment. Small enterprises that are not threatening anybody, but that can grow by working together.

There will be a moment when you will need the media to deny attacks or to explain it as misinterpretation, to let the world know that your people are mistreated, to rally people, ... Slowly prepare the tools you'll need some day.

Unify the numerous student centres, educational organizations, magazines and papers by Internet and organize an annual convention to 'coordinate' plans, and engender news in the media.

There is a multitude on channels that can be used to transmit propaganda when the time is there. In the meantime, things should slowly be built up. There is no deniability in a sudden change in the nature of the message. Modern social technology allows us to disseminate information to a vast number of people. Use diverse channels to do that because even moderate channels can be useful in the big scheme of things.

The printed word is also very powerful, including pamphlets, leaflets, books, magazines, political cartoons, and planted newspaper articles (clandestine or otherwise). Subversion, agents of influence, spies, journalists, and 'useful idiots' can all be used as powerful tools. Your messages will be more powerful when told by others.

Use both 'white' and 'black' propaganda. 'White' or overt propaganda comes from a known source. 'Black' propaganda, however, is propaganda which originates from an unknown source. The key to black propaganda is the fact that it most often appears to come from a disinterested source when in fact it does not.

Diplomatic

Show the world that you're the leader of a peaceful and concerned neighbouring country trying to help your people abroad. Build favourable relationships to make sure you have and keep the benefit of the doubt. Try to join alliances while poisoning the relationships amongst members.

Law enforcement

Increase crime in the other country by ‘exporting’ your criminals and providing them sanctuary. If the victim-nation is complaining that you do not prosecute persons committing crimes abroad, explain the gap in legislation and ask permission to send police to help restore law and order. If allowed, use your police to ‘protect’ the favourable ethnic groups.

Intelligence

Decrease the sense of security by manipulating the intelligence community with misinformation. Periodically overwhelm the data gathering systems with reports of impending attacks on bridges, tunnels, water supplies, airports, apartment buildings and malls. Openly stimulate your people to report, and provide them with doubtful data to consequently report.

Financial

Try to infiltrate the local businesses by financially helping companies. Create a dependency of local business to assure an iron grip on the local economy.

Economic (e.g. agriculture, energy)

Export the good things of your nation, even if you have shortages. Stimulate the creation of restaurants. Send out medical experts, engineers, and other professionals to occupy key positions in the economy. Use the resulting economic power to influence decisions.

Technology

Help the other by offering technology with support in the form of experts. Make sure that you stay in control of that technology.

As good example is cyber technology. Computers and software are all around and can contain sleeper software activated with a simple command.

Environment

Environmental accidents can be used as propaganda against the ruling government, even if these are created for such a purpose. Pollution is cross-border and a perfect excuse to gain influence. An environmental disaster creates the opportunity to send in troops under the excuse of humanitarian aid.

In a more active way, the environment can be used along the lines of separation. Different culinary habits may offer the possibility to poison particular food chains or to introduce diseases.

Culture

After the initial attenuation of the ideological and religious differences, the cultural lines of separation can be used to widen the gap and to enhance the formation of ghettos. These concentrations facilitate the ‘we against them’ feeling, necessary for phase 3.

Educational

The youth are the future of a nation, so be sure to infiltrate the educational system. Demand that your culture is explained. Facilitate the teaching of your country's history by offering teachers, free packages, online courses …

Try to create your own schools that focus on your cultural specificity which will lessen interest in integration.

Provide very sizeable monetary grants to colleges and universities in America to establish centres for studying your culture and promoting the introduction in higher education institutions.

Population

Like most wars, it is all about the people, but instead of trying to convince the current inhabitants, you replace them slowly, but steadily. You can use the concept of demographic changes, such as the rise of megacities, aging of the local population, stimulated immigration and refugees to your advantage. First infiltrate the population and later expand your ethnic group by means higher birth rates, mixed marriages, family reunifications …

Afterthoughts

It must be clear by now that to wage a Slow War you must have access to a wide spectrum of sources of power. A diversified use of power and their tools render it possible to stay below the noise level and to conquer a nation in a deniable manner. Only a trend analysis bordering on paranoia makes such a war and its goals visible. The disbelief in complot theories and the normal turnover of military and other personnel decreases the possibility of such a discovery.

I have no doubt that if we analyse some slow evolutions in the world around us, certain trends would surface. The question is if some of these trends are orchestrated by a single body towards common objectives. We may never know it. And if we suspect it, who will believe us and what can we do about it?

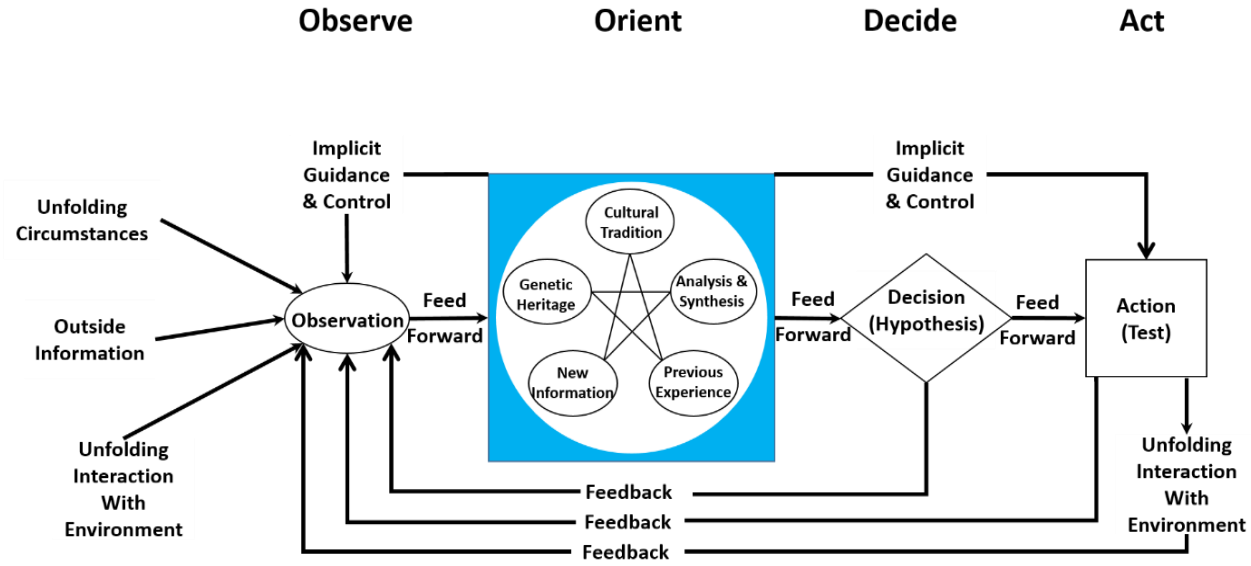
How to Speed Up Your OODA Loop?

Van Hoeserlande Patrick

The OODA Loop?

Acknowledging that even an acronym like DOTMLPFI is not well understood in our HQ, I would not be surprised if only a few people have ever heard of the OODA Loop, even though it is considered one of the latest revolutionary concepts in the art of war. And to be honest, it is not even a loop. It is an almost chaotic network of interactions representing the decision-making process, but we humans like to keep it simple, so we call it a loop.

According to the inventor Col (USAF) John Boyd, decision-making occurs in a recurring cycle of Observe-Orient-Decide-Act, the OODA Loop. For a long time, I thought it was the military, albeit modernized, version of the older Shewhart cycle, also known as the Plan–Do–Study–Act (PDSA) cycle. Dr W. Edwards Deming improved this latter cycle and made it world famous as the Plan-Do-Check-Act (PDCA) cycle. But my simple approach was a mistake.



The above illustration of the OODA Loop (or Boyd's loop) shows that all decisions are based on observations of the evolving situation tempered with implicit filtering of the problem being addressed. These observations are the raw information on which decisions and consequent actions are based. The observed information must be processed to orient it for decision making.

Boyd said, the second O, ‘orientation’ – as the repository of your genetic heritage, cultural tradition, and previous experiences – is the most important part of the OODA Loop since it shapes the way you observe, the way you decide, the way you act. As stated by Boyd and shown in the ‘Orient’ box, there is much filtering of information through your culture, genetics, ability to analyse and synthesize, and previous experience.

Once oriented by making sense of the information, you make a decision (‘D’) in the form of a hypothesis or understanding. This decision will drive your actions (‘A’) with the understanding that you will influence the environment towards a positive outcome.

Utility theory (the basis of game theory) describes how decisions are made based on the perceived value of taking an action. The OODA Loop shows that prior to making a decision (the Decide phase), the person will first have to get information (Observe) and determine what it means and what can be done about it (Orient). In this way, the utility sought at the Decide phase can be altered by affecting the information the opponents receive and thus the cognitive model they apply when orienting to it.

The OODA Loop in Military Operations

Since the OODA Loop was designed to describe a single decision maker, the situation is usually much more complicated and worse than shown, as most decisions have a group of people observing and orienting, each bringing their own cultural traditions, genetics, experience and other things. It is here that decisions often get stuck, which does not lead to winning, since in order to win, you should operate at a faster tempo or rhythm than your adversaries, or better yet, get ‘inside’ their OODA.

The key is to obscure your intentions and make them unpredictable to your opponents while you simultaneously clarify their intentions. That is, operate at a faster tempo to generate rapidly changing conditions that inhibit your opponents from adapting or reacting to those changes and that suppress or destroy their awareness. Thus, a hodgepodge of confusion and disorder occur to cause the other side to over- or under-react to conditions or activities that appear to be uncertain, ambiguous, or incomprehensible.

With their familiar clues hopelessly scrambled, your rivals under pressure will usually try to interpret the mess from their accustomed perspective. While the confused rival struggles, the savvy commander quickly executes yet another set of manoeuvres, once more scrambling the parts and further feeding the opponent's confusion. Ultimately, Boyd wrote, the winner "collapses his [adversary's] ability to carry on." You win the competition by destroying your opponent's frame of reference. This because your adversaries will be unable to generate mental images or pictures that agree with the menacing as well as faster transient rhythm or patterns they are competing against. They have simply not enough time to orient and make sense of the observations, resulting in decisions that an advantageous to us.

The proper mind-set is to let go a little, to allow some of the chaos to become part of your mental system, and to use it to your advantage by simply creating more chaos and confusion for the opponent. You have to funnel the inevitable chaos of the battlefield in the direction of the enemy.

It is easy to understand that an entity (whether an individual or an organization) that can process this cycle quickly, observing and reacting to unfolding events more rapidly than an opponent, can thereby ‘get inside’ the opponent's decision cycle and gain the advantage.

Some people reduce, based on this ‘getting inside the decision loop’, the art of war to speeding up the cycle. This is a simple way to interpret the use of the OODA Loop, but it is misleading in its simplicity. There is a point where you can go too fast. You must give your opponent the time to react to what they think is happening to them. There is no use for further action if the other side only needs time to come to the inevitable conclusion. You don’t need to shoot a decapitated chicken, just because it runs around. Does that mean that you have to sit and wait? No.

The deeper meaning of the OODA Loop

Frans Osinga argues that Boyd's own views on the OODA Loop are much deeper, richer, and more comprehensive than the common interpretation of the 'rapid OODA Loop' idea. Boyd developed the concept to explain how to direct one's energies to defeat an adversary and survive. Boyd emphasized that ‘the loop’ is actually a set of interacting loops that are to be kept in continuous operation during combat. He also indicated that the phase of the battle has an important bearing on the ideal allocation of one's energies.

Taking control of the situation is key. It is not enough to speed through OODA faster - that results in flailing.

According to Boyd, systems work well if the organization is focussed because of ‘schwerpunkt’, a German term meaning organizational focus. ‘Schwerpunkt’, Boyd wrote, "represents a unifying medium that provides a directed way to tie initiative of many subordinate actions with superior intent as a basis to diminish friction and compress time." That is, individuals decide and act locally, but they are guided by a keen understanding of the bigger picture.

In effective organizations, ‘schwerpunkt’ connects vibrant OODA Loops that are operating concurrently at several levels. Soldiers close to the action stick to tactical loops, and their commanders travel in operational loops, while generals navigate much broader strategic and political loops. The loops inform each other: If everything is clicking, feedback from the tactical loops will guide decisions at higher loops and vice versa.

Additionally, the loop doesn't require individuals or organizations to observe, orient, decide, and act, in that order, all the time. This may just take too much precious time. Think instead of the loop as an interactive web with orientation at the core. Orientation directly guides decisions, but it also shapes observation and action. At the same time, orientation is shaped by new feedback. An effective combatant, Boyd reasoned, looks constantly for mismatches between his original understanding and a changed reality. In those mismatches lie opportunities to seize the advantage.

And reality, Boyd understood, changes ceaselessly, unfolding "in an irregular, disorderly, unpredictable manner," despite your vain attempts to ensure the contrary. "There is no way out," Boyd wrote. "We

must continue the whirl of reorientation, mismatches, analyzes/synthesis over and over again ad infinitum." The OODA Loop persists endlessly. Instead of just speeding up, you should extend and enhance your understanding, your sense-making capacity.

Is the OODA Loop still valid?

The OODA Loop gives us a good insight on how people and organization take decisions, but its direct military application supposes a typical, centralized command and control. Confuse the enemy until the complete C2 falters, ending in futile, uncoordinated actions. A bit like killing a chicken by cutting off its head. The chicken will still run around for a bit, but in the end, it drops dead.

But does the loop help us in the case of a decentralized counterpart? In their book 'The Starfish and the Spider: The Unstoppable Power of Leaderless Organizations' the authors explore the characteristics and implications of decentralized organizations. The spider and starfish analogy refers to the contrasting biological nature of the respective organisms, starfish having a decentralized neural structure permitting regeneration.

The decentralized organization strives on the power of chaos, making the use of chaos the weapon of choice to render the opponent less efficient. Every person added to the organization makes it stronger and less prone to breakdown. When attacked, a decentralized organization tends to become even more open and decentralized. The chicken drops dead but is soon replaced by more and smaller chickens that are better adapted to fight you. Imagine Hercules fighting a variant of the Lernean Hydra that does not grow extra heads, but new hydras. In the end, even the half-god would have succumbed to this labour.

On the other hand, when attacked, a centralized organization, like the military, tend to become even more centralized. Reaching the 'schwerpunkt', as the accelerating force for decision-making, becomes harder. This centralization tendency makes the OODA Loop throughout time longer and less adapted to deal with the increased chaos by the attacks from a multitude of organizations with their own and different mental frameworks. The slowing down OODA Loop loses its grip on the increasingly complex environment, resulting in a multitude of enemies with faster loops getting inside the cycle. In the end, the spider will succumb to the starfishes.

Do we need another model to fight decentralized organizations?

Team Performance Taxonomy

Bloom's Taxonomy serves as the backbone of many teaching philosophies, in particular, those that lean more towards skills than content. This taxonomy is the basic tool for analyzing the training requirements within NATO's Global Programming. Although the taxonomy focusses on the individual, it also serves as the basis for assessing the collective site of the training spectrum and the consequent analysis. Is this the right approach?

Although named after Bloom, the publication of 'Taxonomy of Educational Objectives' followed a series of conferences from 1949 to 1953, which were designed to improve communication between educators on the design of curricula and examinations. Before the publication, educators viewed content as the vessel for teaching skills. The emphasis on higher-order thinking inherent in such an approach is based on the top levels of the taxonomy, including analysis, evaluation, synthesis and creation. Bloom's taxonomy can be used as a teaching tool to help balance assessment and evaluative questions in class, assignments, and tests to ensure all orders of thinking are exercised in learning.

Proficiency at the collective level requires forces, often joint, to engage quickly and to integrate their capabilities across domains, echelons, geographic boundaries, and other organizational affiliations. Since the individual's preparation is a prerequisite for collective effectiveness in the execution of tasks, individual and collective training must be viewed as a closely interconnected continuum.

Figure 1: Photographic Representation of the NATO Training Spectrum.

NATO's Training Spectrum has two aspects (Figure 1 & Figure 2): Individual and Collective[1]. It is then further described in four discreet areas, i.e. Education, Individual Training, Collective Training, and Exercises, which are defined as follows:

- Education – The systematic instruction of individuals that will enhance their knowledge and skills, and develop competencies. It is the developmental activity enabling individuals to make a reasonable response to an unpredictable situation (mind-set).
- Individual Training – The development of skills and knowledge necessary to perform specific duties and tasks. Individual Training is a learned response to a predictable situation (skills).
- Collective Training – Procedural drills and practical application of doctrine, plans, and procedures to acquire and maintain collective tactical, operational and strategic capabilities to predictable situations. It is focused on the collective performance of a Headquarters and/or a formation. The Commander has the possibility to stop the training event, correct the performance and repeat the execution.
- Exercises – Collective activities where Headquarters and/or formations are prepared to fulfil their missions, driven by external stimuli of a scenario and typically assessed on their readiness.

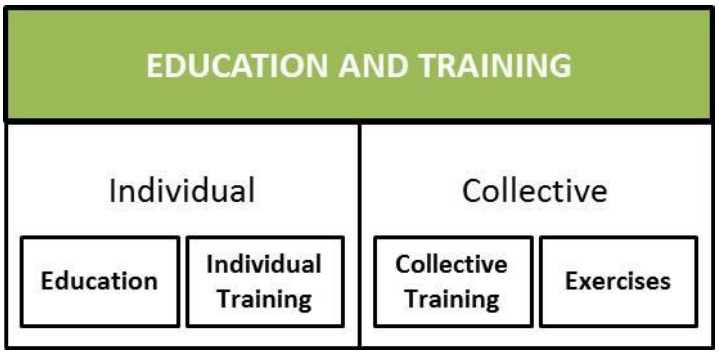


Figure 2 : The NATO Training Spectrum.

During the Training Requirements Analysis, a step within the Development Methodology, the tasks are examined in greater detail and further refined into Audience, Functional Area, Task Performance Statement, and Proficiency Level. The combinations of these 4 elements for

[1] Military Committee 0458/3 NATO Education, Training, Exercise and Evaluation (ETEE) Policy, dated 04 September 2014.

every task result in the individual and collective NATO E&T requirements[2]. These requirements are eventually matched to existing E&T opportunities (potentially) open to NATO as solutions for satisfying the identified NATO E&T Requirements. The tool for matching requirements with solutions is a stratification scale of Job/Function Performance Level for requirements and solutions based on Bloom's Taxonomy.

A performant tool for the individual side of the spectrum, its use for the collective side neglects the difference in nature of both aspects. Using Bloom to stratify collective requirements and solutions assumes that, for reaching a certain team performance level, it is sufficient to bring the involved team members individually at that level. A collective level equals the sum of the individual levels. Collective training is reduced to a single training session done in group.

Although not explicitly recognized during the training analyses, the reports resulting from these sessions are limited on the collective side by stating the event(s) wherein the requirement is collectively trained or exercised. There is no way to assess the adequacy of the identified solution in satisfying the collective requirement as there is no collective element within this Bloom-based approach.

Collective training enhances team proficiency beyond simply putting the individuals together. Every effort to expand a Bloom-based Taxonomy towards the collective side will end in failure because the collective is more than just the sum of the individual capacities. Any proposal of a taxonomy for the collective side neglecting this observation has no value.

Studies

Collective training is certainly not a new thing. It has been done by professionals like the military, firefighters, emergency and disaster assistance teams. It is surprising that a search on the topic reveals few useful studies. The majority of the studies focus on the individual side; a limited number cover the collective side. These latter studies restrict themselves to small teams. Working in teams is a popular theme, but the studies or managerial books only cover

[2] It may be that the NATO E&T requirement can only be efficiently satisfied by a NATO E&T Solution combined with an 'On the Job Training' (OJT). This OJT is a responsibility of the organization the individual belongs to.

how to make a team out of a small group of people. The proposed methods do rarely include collective training of complete organizations.

In hindsight, this should not have come as a surprise because training big teams like military units or headquarters have only value in life-threatening crises which are rare in day-to-day business life. Real life situations are considered as sufficient to 'train' a team in handling a routine production job. There is no need for extra training for a rare situation; lives do not depend on it, only jobs.

There are some team taxonomies and maturity models out there, but these are focussed on the behaviour or development status of teams and not on guiding collective training.

Even studies in the military realm are rare. The few found concerned highly specialized teams which are out of the scope of this document. This lack of studies may be caused by the tendency of the military to limit internal publications.

Observations

The long history of collective training in the military gave shape to the current situation. A taxonomy should somehow take the acquired 'general knowledge' on collective training into account. This knowledge is observable during the planning and execution of collective training.

While small tactical teams go through rigorous training schemes by repeating the execution of tasks in certain situations over and over, big headquarters at the strategic level rarely train as a team. The main differences between these two extremities of the team continuum are:

1. The time to complete (a part of) an OODA-loop[3];
2. The complexity and amount of information to be analyzed before deciding;
3. The direct threat of loss of lives of team members or others involved.

This observation brings us to the question: Why do we train collectively? The main aim is to be effective in the execution of a collective task within a given timeframe and to increase the

[3] OODA loop stands for Observe, Orient, Decide and Act and was invented by USAF Col John Boyd.

speed of execution. Only if the set of (sub)tasks must be executed in parallel is there a need to collectively train. In that case, training provides each member with a better understanding of what is expected, when it is expected, and to whom the output should be given and builds trust amongst the members in the output of others.

Another observation is that although individual performance is a necessary condition for team performance, the team performance level does not necessarily improve by education and individual training. The idea that a certain level of team performance must be matched by a similar level of individual performance is incorrect. A group of experts does not necessarily makes an expert team.

Figure 3 displays the different types of team training according to two axes: unit[4] and task. The Task-axis distinguishes between a general approach to tasks that are valid for the majority of the teams; and specific tasks that are to be executed by the team at hand. The second, the Unit-axis also distinguishes between a general unit meaning that the participants are not members of the same team but may be different members of similar teams; and a specific unit, the actual team.

		Unit	
		General	**Specific**
Task	**General**	(GT-GU) Education on interpersonal communication, team skills, leadership, …	(GT-SU) Collective activity to increase team coherence like team building day, solving general problems, …
	Specific	(ST-GU) Individual training of a real task in a temporary group like a simulation, a workshop, …	(ST-SU) Collective training on a task that needs to be performed

Figure 3: Types of Team Training

[4] The term ‘Unit’ is used instead of ‘Team’.

The combination of those two axes gives four types of team training:

1. General Task – General Unit (GT-GU) training is the type that educates and trains individuals in the skills and aptitudes to work as a team member. It provides them with generally applicable knowledge and skills to function within a team. This kind of training can include simulated team exercises. Example: general team training for Staff Officers.
2. Specific Task – General Unit (ST-GU) training focusses on specific tasks the trainees have to perform as part of a team. These tasks are normally limited in scope and within the set of tasks to be executed by the participants within their future team. As with the GT-GU, this kind of training is focussed on the individual and not considered as collective training. Example: training of logisticians to work as a member in a logistics branch.
3. General Task – Specific Unit (GT-SU) training aims to build a specific team out of a group of skilled individuals. The purpose is not to execute the tasks that are part of the job, but to create a team that can handle unforeseen situations through better mutual understanding. Although the tasks are not necessarily work related, the participants are the actual members of the team. Example: a team building exercise for the members of an existing logistics branch.
4. Specific Task – Specific Unit (ST-SU) training prepares a team for an optimum performance of the tasks to be performed by that team. Normally this is done under the supervision by the team leader by (re)executing the tasks until the right output is produced, and then repeating everything again to make sure that there is some sort of automatism. Although GT-SU training can be considered as such, ST-SU is what collective training is really about.

Building the Taxonomy

The first idea for a Team Performance Taxonomy was inspired by the Bloom taxonomy for education and individual training. A simple transposition to collective training did not suffice to explain the number of training activities needed to reach a certain level. The complexity of the collective task at hand, the basis for the Bloom taxonomy, results in a contradiction with the observation of the diminishing training activities from tactical to strategic level.

The second taxonomy considered the impact of time (or speed of decision) and complexity in a simplistic way: the most difficult factor determined the level. Although this combination

improved the taxonomy by mirroring the observation closer, it did not explain in a satisfactory manner the tactical-strategic contradiction.

A Team Performance Taxonomy for Collective Training

The third taxonomy combines the speed of decision and complexity in such a way that both vary independently, but the combination indicates the level within the taxonomy. This is represented by the two lines under the proposed taxonomy of Figure 4. The levels of Team Performance in the taxonomy are ordered from 'aaa' to 'eee' to differentiate with the 100 to 500 levels used on the individual site while keeping a recognizable similarity. For every level, the taxonomy provides the following information to identify the performance level:

- Team member Interactions. The higher the performance level of the team, the more complex and mature the nature of the interactions between the team members are.
- Command and Control of lower units/HQs. As a team (i.e. headquarters) increases its performance level, it will be able to command and control units (or HQs) at subordinate levels. The assumption is that an HQ can only command and control (C2) a subordinate HQ or unit at the same or lower level. It seems hard for an HQ to use a C2 style towards lower echelons that the HQ itself as a team has not mastered yet.
- Procedures. Gives the level and nature of the procedures used/needed by the team to function at that level.
- Internal feedback and communication. This is a reflection of the level of interactions between team members.
- Education & Training. The way the team learns.
- Possible Methods of Collective Training. Suggestions of methods to maintain or improve the level of performance.

The necessity to raise the level of performance, and thus the number of collective training activities of type ST-SU, is normally a combination of increased complexity and speed[5]. This can be expressed by

n_{CT} = f(Training Performance Level) = $k_1(C^{k}{}_2{}^{S}-1)$

[5] Teamwork necessary to increase quality and/or creativity are not considered a base for collective training events as defined here.

with n_{CT} as the number of Collective Training activities, k_1 and k_2 as constants, C for Complexity and S for Speed of Decision.

The formula (see also the graphical representation of Figure 5) does not provide an exact number of training activities but a general guideline. It is clear that the need for speedy decisions drives the number of training activities. The higher the need for speed, the higher the number of activities to reach the desired level. The formula also indicates that when speed is of no importance, there is no need to collectively train.

Complexity has a much lesser impact on the number of training activities. This conforms to the tactical-strategical observation.

Figure 4: The Proposed Taxonomy for Collective Training

		Team Proficiency Level				
		(aaa) Individualized	**(bbb) Programmed**	**(ccc) Integrated**	**(ddd) Proactive**	**(eee) Intuitive**
	Team member Interactions	Non-existent, must still be developed	Limited to what is written and based on general knowledge and experience with previous teams	Interactions are executed in an integrated manner as foreseen in procedures	Integrated interactions as foreseen, but adapt to small changes	Intuitive interactions to new situations
Characteristics	**Command and Control of lower units/HQs**	Not possible	Detailed Tasking	Tasking	Objectives that are translated in tasks	Mission Command
	Procedures	External detailed procedures	Mostly external procedures	Developing own detailed procedures	Own procedures for known situations	Own, flexible procedures
	Internal feedback and communication	None	Limited capability to reflect procedures, structures, and tasks	Capability to reflect on own processes, structures, and tasks; elementary LL process	Capability to contribute to and implement LL processes	LL Processes (including subordinated entities)
	Education & Training	Copy, completely dependable on external E&T	Follow given instruction, mostly dependable on external E&T	Educate and train staff to absorb changes in personnel	Educate and train to absorb big turnover of personnel and augmentees	Educate and train to adapt to new situations and missions
	Possible Methods of Collective Training	E&IT	Collectively run through procedures, Cross-Functional Training, BST, KLT, Demos, Role Play	BST, AAR, FTX, KLT, Group Simulations, Field Trip	FTX, Group Simulations, Group Gaming, Field Trip, Guided Discussions	FTX, Group Gaming, Group Discussions
Complexity	**Command and Control by higher HQ**	Detailed Tasking	Tasking	Objectives that are translated in tasks	Mission Command within certain limits	Mission Command
	Environment	Unilateral	Multiple environments (limited number and complexity)	Multiple (moderate complex) environments	Increasingly complex environments	Complex Environments
	Forces	Single Service, single nation	Single Service, Combined	Joint and Combined	Joint, Combined, with substantial contribution by partners	Joint, Combined, partners and Interagency
Speed	**Speed to complete the OODA loop for the task at hand in the time available**	Speed is not the driver	Step by step as there is ample time to decide and execute	Routine like speed as task must be executed under normal time restraints	High speed	Quasi-instantaneously from observation to executed action

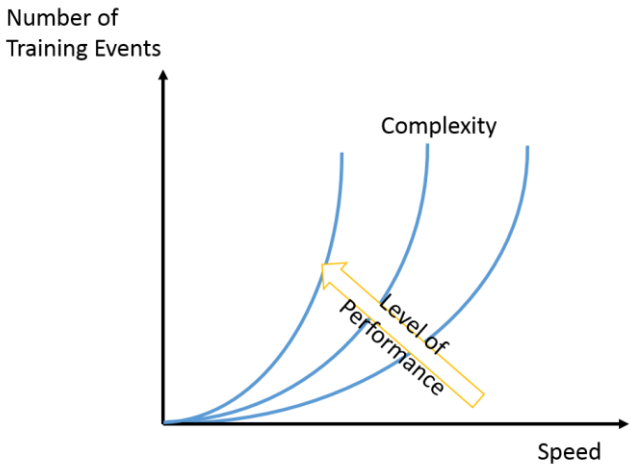


Figure 5: Graphical Representation of the Impact of Speed and Complexity on the Number of Collective Training Activities.

As mentioned above, there are 4 types of team training. The use of the other 3 types influences positively the constants k_1 and k_2. These constants can also be reduced by the experience of the members with working in other teams, the experience of the team in other tasks (comparable to the GT-SU type of training) and, of course, real life experience (i.e. operations). Although the latter can greatly increase the team performance level, as observed during an HQ in an operation, this approach is not a valid collective training option.

The taxonomy offers other insights. The first taxonomy based on Bloom, i.e. the one currently used in the Training Requirements Analyses, suggests that for a team to reach for example a '400' level in team performance, all members should perform at the comparable 400-level on an individual basis. This is in contradiction with the observed connection between the individual and collective level. The link with education and individual training is through the 'aaa' level; this underlines the basic idea of the NATO Training Spectrum that individual preparation is a necessary but not a sufficient condition for collective performance. It also does not lead to the wrong conclusion that more individual training leads to increased team performance.

Although the taxonomy may suggest that a team performs at a certain level, the reality is not that simple. A bit like Bloom's Taxonomy, the real level of a team will be a mix of the execution of collective tasks at different performance levels. To master a new task, a well-oiled team needs collective training, but the number of training activities will be fewer than a less-mature team.

Although the taxonomy is intended to be used during the Training Requirements Analysis within one discipline, i.e. a collection of similar and related education and training requirements, most teams will be working in an interdisciplinary manner. This is observed on most Collective Training activities and Exercises, although there are exceptions (e.g. a Logistics Exercise, Nuclear Training). Nevertheless, like a team is a mix of different levels, the levels within a team may be different over the different disciplines. The taxonomy should be used with this in mind.

The highest level is not the ideal level of performance for a team. The higher the level, the more collective training is needed to attain and sustain it. The need for speedy decisions and the complexity of the environment should be the driving factors in the determination of the appropriate level, resulting in the necessary investment in collective training, not the simple aspiration to have a high-level team.

Conclusions

The proposed Team Performance Taxonomy for collective training goes away from the similarity with Bloom's Taxonomy for Knowledge and Skills. It satisfies the observations of current practices in collective training and relates the training effort to the desired speed of decision and the complexity of the environment wherein a team is working. More collective training is needed for teams working in complex environments and in need for shorter OODA-loops.

The use of this taxonomy during the Training Requirements Analysis requires of the analysts to look in a different way at team performance and questions the practice of using the same requirements on the individual and the collective side of the NATO Training Spectrum.

Concept Development Success by Cultivating Chaos

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 people involved, 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're 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 by newer and more performant hardware, and to move towards considering the best options amongst 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[2]. 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' (LoD) 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

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

2 Transformation from Strategic Orientations to Capabilities for Operations ACST-APG-CGEN-SXX-001, 01 March 2007.

is to provide capabilities for operations'. This directive had a transformational punch and its conception was heavily supported by the main players.

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 operations was characterized by four consecutive phases: 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 DOTMLPFI[3]. This interdisciplinary alignment and the consideration of non-material focused solutions to capabilities gaps, promotes thinking outside the box and creates connections over the organizational silos.

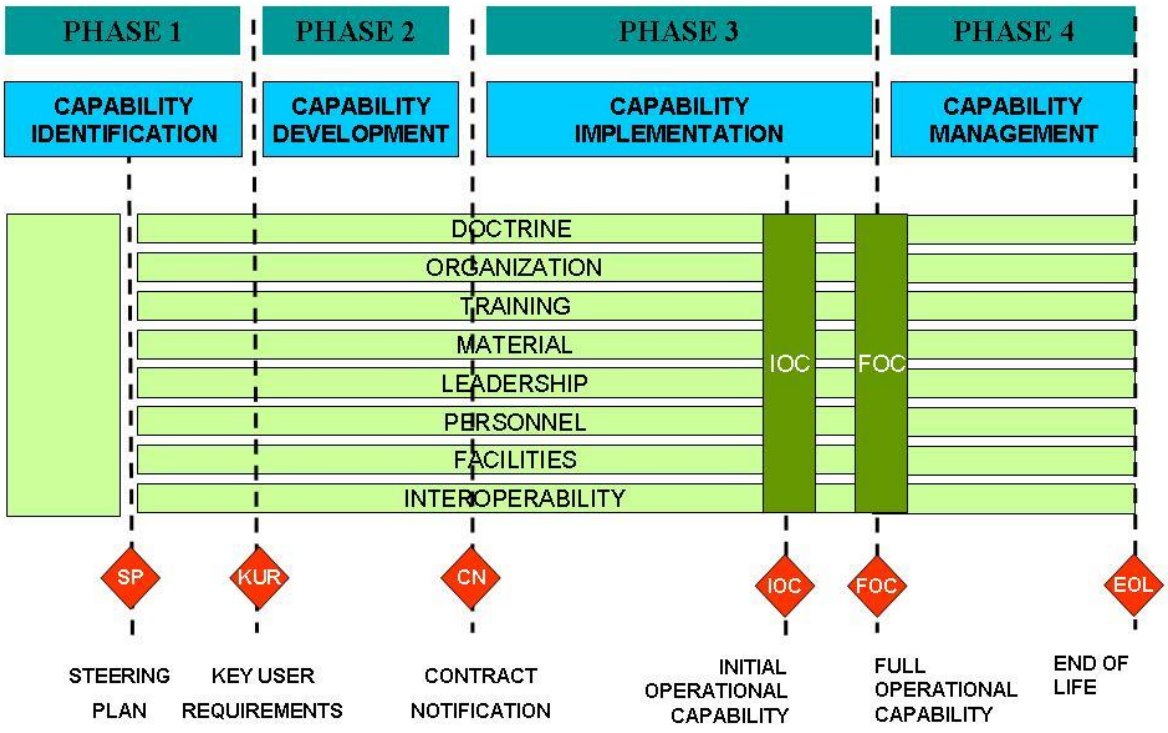

Figure 1: Transformation from Strategic Orientations to Capabilities for Operations

[3] DOTMLPFI = doctrine, organization, training, materiel, leadership, personnel, facilities and interoperability.

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.

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 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 from 2006[4] 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 unpredicted changes in the future.

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4 ACST-SPS-CGEN-SXX-001 'Leidraad voor het ontwikkelen van concepten', 01 April 2006.

Second, the identification of a concept followed a 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 organization.

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 directive 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'[5]. 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 it, but it

[5] John R. Boyd, 'Destruction and Creation', 3 September 19760

was never supported by the needed cultural change. We are by design lazy; we would rather stick to our thought patterns and re-interpret reality than change our thinking[6].

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 9999 'failures'. Moreover, failures do stand out on a military CV. This acceptance becomes even harder if an idea already passed some hurdles. We prefer to push an idea further through the process, far beyond its life span, than to kill it. Charles Darwin claimed the survival of the fittest, but he did not mean that only one species should survive[7]. 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, 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[8]. Great painters like Rubens or Picasso seldom painted a masterpiece in one try. They needed tons of sketches.

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

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6 Kahneman Daniel, 'Thinking, Fast and Slow', New York: Farrar, Straus and Giroux, 15 October 2011.

7 Darwin Charles R. 'On the origin of species by means of natural selection, or the preservation of favoured races in the struggle for life', London: John Murray, 1869 5th edition.

8 Thomas Edison A. "I have not failed. I've just found 10,000 ways that won't work" as quoted in Nathan Furr, 'How Failure Taught Edison to Repeatedly Innovate', Forbes, 9 June 2011.

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 with 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.

The Nature of the Military Organization

Van Hoeserlande Patrick

A task can be carried out by one person until that task comes under time pressure. From that moment on, the person needs to split the task into smaller parts or subtasks and look for help. To coordinate the subtasks into a final output, the collaborators have to communicate. As the number of tasks grows or time pressure builds up, more people will be drawn in.

More people means more time to be spend on communication. Because the number of individual interactions follows a 2 to the power of the number of people law (2^n), this growth is not sustainable. At a certain moment, the non-productive time spent on communication to coordinate the work and to integrate a member into the group will exceed the productivity gained.

This is the moment to organize or manage the work. We have introduced the concept of organization to get things done when individuals cannot do certain tasks by themselves anymore. Additionally, most organizational theorists and researchers agree that if you want to produce formidable outcomes, organizations are the answer. However, the root function for setting up an organization is to limit the time spent on communication. The ideal organization to achieve this has some sort of pyramidal form. One decides what to do and is responsible to communicate the decision to the next level. The number of interactions drops from 2 to the power of the number of members (2^n) towards 2 to the power of the number of levels (2^l).

Of course, this type of organization has its flaws and limitations explaining the reason why we invented so many variations, all ending up with more communication interactions than in the ideal model and thus increasing the time between the observation and decision phases of the OODA-loop. No wonder that in the military, the adherence to orders played such an important role because the good function of the pyramidal structure depends on the strict execution of a decision.

In 1937, Ronald Coase wrote an influential article under the title “The Nature of the Firm”. It offered an economic explanation of why individuals choose to form partnerships, companies and other business entities rather than trading bilaterally through contracts on a market.

Given that production could be carried on without any organization, Coase asks, "Why and under what conditions should we expect firms to emerge?" Since modern firms can only emerge when an entrepreneur of some sort begins to hire people, Coase's analysis proceeds by considering the conditions under which it makes sense for an entrepreneur to seek hired help instead of contracting out for some particular task.

The traditional economic theory of that time suggested that, because the market is "efficient" (that is, those who are best at providing each good or service most cheaply are already doing so), it should always be cheaper to contract out than to hire.

Coase noted, however, that there are a number of transaction costs to using the market; the cost of obtaining a good or service via the market is actually more than just the price of the good. Other costs, including search and information costs, bargaining costs, keeping trade secrets, and policing and enforcement costs, can all potentially add to the cost of procuring something via the market. This suggests that firms will arise when they can arrange to produce what they need internally and somehow avoid these costs.

There is a natural limit to what can be produced internally, however. Coase notices "decreasing returns to the entrepreneur function", including increasing overhead costs and increasing propensity for an overwhelmed manager to make mistakes in resource allocation. This is a countervailing cost to the use of the firm.

Coase argues that the size of a firm (as measured by how many contractual relations are "internal" to the firm and how many "external") is a result of finding an optimal balance between the competing tendencies of the costs outlined above. In general, making the firm larger will initially be advantageous, but the decreasing returns indicated above will eventually kick in, preventing the firm from growing indefinitely.

Other things being equal, a firm will tend to be larger:

- the less the costs of organizing and the slower these costs rise with an increase in the the number of activities.
- the less likely the entrepreneur is to make mistakes and the smaller the increase in mistakes with an increase in the number of activities.
- the greater the lowering (or the less the rise) in the price of the input of production to firms of larger size.

Although Coase does not consider non-contractual relationships, I wonder if his article may give us some insights into the military organization. The conclusions of his study were based on the decision between hiring and contracting. Although contracting out support services has gained popularity in the military, this kind of service provision does not concern our core business (i.e. the equivalent of ‘production’). So, even though the conclusions would apply to this set, I will not consider them further.

To draw some useful information out of the study, we need to determine the equivalence of a ‘firm’ in the military establishment. The existence of Armed Forces is not useful as, according to international rules, their creation follows only one rule: the existence of a nation. A ‘command’ is about the closest we, as military, come to a ‘firm’. In the following paragraphs, I consider the existence of a command as equivalent to the existence of a firm.

The first two costs in Coase’s list will increase with the spatial distribution of the transactions organized and the dissimilarity of the transactions. This explains why firms tend either to be in different geographic locations or to perform different functions. However, technology changes that mitigate the cost of organizing transactions across space will cause firms to be larger. Computers and internet are such technologies that tend to increase the size of firms.

Our distinction between regional and service-oriented commands follows the same reasoning as in the civilian world. We also see a tendency towards more jointness and more comprehensiveness.

Consider this idea when you observe an increased interest of the Air Command to absorb Space and Cyber. Combining different domains into one approach becomes feasible thanks to the increase in computing power and the enhancement in communications tools. As these technologies improve further, we will see an ever increasing span of control as well as a growth in the size of commands.

The relationship between technology and the lowering of the likelihood of making mistakes needs some clarification. For one, the commander will have access to more information, and being better informed should lead to fewer mistakes by ignorance. Also, he is able to contact anyone to ask advice; better advised means fewer mistakes. Simulations make it possible to test different options before deciding.

Although technology will allow an almost limitless increase in span and size, I wonder how far commanders will be able to cope at a human level with this. More information and advice is excellent, but will the commander be able to make sense of it all? Some are already speaking about supporting the decision-making process of commanders with Artificial Intelligence. They even suggest getting humans out of some loops.

The third cost for supplies seems a bit strange in a military environment. But, when we consider the costs of modern weaponry, we clearly see the benefit of having bigger armies, or at minimum common acquisition of big weapon systems. Although I do not think that this cost will, by the effect of technology, increase the size of commands, I foresee a trend towards more authority of existing commands. An EU acquisition will in the long term lead to an ‘EU Defence’; NATO will be more and more involved in what is nowadays considered ‘national’.

All considered, we seem to be heading to some sort of super, all-encompassing command. Did I miss something? Or is there an element not captured in Coase’s study countering this expansion?

The Oregon Approach to Capability Development

Patrick Van Hoeserlande & Paul Stubbe[1]

Former American Secretary of Defence Donald Rumsfeld said during the Gulf War: "You go to war with the army you have, not the army you might want or wish to have at a later time." However, as soldiers, we want the capabilities that we employ in an operation to be precisely those we need, and not those we needed yesterday. It is not for nothing that the core mission of a Defence organisation is to determine and build the best portfolio of capacities that allows flexible and correct answers to future deployment questions. Traditionally, this core process is centrally managed or, at the very least, controlled. Our strategic departments try to form an idea, mental picture(s) of the future, global situation, and possible crises in which we will have to operate as armed forces. The definition of the required capabilities starts the process of acquiring and maintaining these, an expanding process gradually involving more and more departments.

But the statement by Rumsfeld shows that the way the process(es) work(s) does not lead to a satisfactory answer, even for a big army as the Americans. This, at first glance simple process is in 'practical' implementation many times more complex: the future image does not appear to keep up with reality; the long procurement procedures result in non-adapted equipment (who does not remember the Hummers 'armoured' with steel plates?) and devour large parts of the budget leaving too little room to adapt. Doctrine appears not to have evolved fast enough, and 'lessons identified' hardly lead to real 'lessons learned' or improvements.

Given the complex and rapidly changing environment in which the equilibrium between doctrine, organization, training, equipment, leadership, personnel, facilities and interoperability (in short: DOTMLPFI) must be found, it may be called a (small) miracle that capabilities we identify today are indeed tomorrow the 'right' one. Limiting the execution of our core assignment to a small, high performing team seems hopeful for a good result, but "hope is not a method"[2].

Can we do it differently?

[1] This article was written in Dutch a few years ago, but never translated in English.

[2] "Hope Is Not a Method" is the title of a book by US Gen Gordon Russell Sullivan.

It is easy to expose the errors of an approach but formulating a counter proposal is a greater challenge. Albert Einstein nicely summarized it with "Insanity: doing the same thing over and over again and expecting different results." We cannot continue to work with the existing system and expect a better result; we need to walk another path to get to another destination. We ask you, our reader, follow us in our reasoning for a few moments and judge our idea at the end.

In our approach, we throw the intrinsically static, strategic plan overboard and replace it with a permanent decision process that starts from the current situation. We embrace the changes that will take place but refuse to make predictions about their nature and extent. Any prediction based on contemporary hypotheses is doomed to be outdated when in contact with the future.

To put this concept into practice, we propose six principles. We will discuss them and confront them with the current way of developing capabilities. This makes the principles more tangible than a boring theoretical explanation.

1. Organic order

This principle eliminates a 'fixed' picture of what the future will look like. After a while, a vision for the future cast in a strategic plan begins to be regarded as the true future. A great deal of energy and time was invested in this plan and it is the result of decisions at the highest level. Therefore, it must be correct. Deviations from it are explained but not studied. We can only conclude that the future does not follow a plan, how brilliant it might be, it more likely will deviate from it. If the future does not like to be captured in a plan, do we then have to wait passively for the future to happen?

Of course not. The key is not to invest in a robust plan, but in the process that determine the future set of capabilities. Spending time developing and improving the process that detects changes and can respond flexibly to these is a much better investment than labouring on a 'better' plan. Developing a good idea of the end goal is secondary to the capacity to adjust smoothly to changes. If a strategic plan leads to a coherent whole, how do you achieve this with a flexible process?

The imagery of the growth of a forest explains this principle well. There is no central forest spirit that tell the trees and scrubs how to grow. Every tree finds its way into the whole and its configuration meets the condition of today. Due to steady growth, it will also meet tomorrow's requirements. Of course, there are trees here and there that are cut off or die. However, compared to an artificial forest, our natural forest is much better adapted to the future.

Let us come back on the assumption of the 'strength' of a plan in maintaining a coherent whole. On paper, this seems to be true, but because the hypotheses of the plan must

be revised after some time, this leads to changes (the truncated trees). The latter causes the coherence to crumble, so that the result is less homogeneous. Do you know a large, coherent organization as a result of the implementation of a strategic plan? We do not.

2. Step-by-step growth

Capacities grow gradually. The development is not a succession of all-encompassing projects, but of a balanced set of initiatives, large and small. The latter are just as important as the former. Large projects that usually involve the acquisition of material for (new) capacities tend to attract more and more resources. The proliferation of programs, budget overruns... combined with the hierarchical power backing up such projects lead to cutting short the necessary support after the acquisition and in the investments in current capacities. The need for smaller projects is increasing, but these are being less and less honoured. Until finally only a new, large project can bring 'salvation', but the means for one are lacking.

How can we put this principle into practice? In a first step, we must determine what a small, medium, or large project means in terms of resources within our organization[3]. After that, the operational and investment budget must be balanced between these groups. Ideally, the same amount of money goes to each group. This means that only a few large, more medium and many small projects are budgeted, so the big ones no longer pose a threat to the smaller projects. Acquisition in balance with maintenance of capacities, innovation in balance with continuous improvement.

3. Patterns

Our planning process is not chaotic. It is structured according certain agreements or patterns. These patterns describe the recurrent core of every solution of a problem in such a way that the core can be applied multiple times without resulting in the same solutions. This pattern is expressed in the form of an instruction. No single pattern stands alone because it is supported by other patterns. The larger patterns in which it is embedded, the patterns of equal size that surround it and the smaller patterns that are part of it. These are good and tested approaches on every level from strategic to the operational and tactical level.

Although a pattern on the lowest level has many similarities with tactical doctrine, the concept of patterns applies to every DOTMLPFI element. After all, a pattern describing the composition of a combat section influences not only the doctrine for that section, but also tits transport means.

[3] Of course, more than three groups can be used too.

Drawing up a manual with recognized patterns is certainly not an easy task. It constitutes bringing together and consolidating the common knowledge that is already present and will be built up in the future. It is probably the biggest challenge in applying this new approach.

4. Research

Research into the existing informs about the improvements under way and exposes the need for new projects. Active failure detection, whether caused by errors, and the constructive reporting of poor conditions is important to be able to learn lessons and to launch the necessary improvements. This critical research should be duly repeated and where deemed necessary. By excellent research, much more important than a great vision, an organization can anticipate in a very flexible way to changing conditions.

Recognized patterns are the touchstone of the research. It is there where the situation deviates from agreed patterns that research is needed leading to possible improvements. However, this must be done with the necessary scepticism in relation to the patterns themselves.

5. Participation

The basic idea for a renewed planning process is that the soldiers directly affected by the outcome of the process are best placed to steer it and therefore should be directly involved. In addition to guiding the culture change through awareness and training, it must be structurally such that we mobilize the collective knowledge and experience throughout the entire planning process.

A different division of the available budgets has been proposed above. A possible realization of the participation lies in the allocation of the funds to projects. In the category small projects, battalion commanders investigate components of capacities and tests those against the accepted patterns. When they detect deviations, they should be authorized to propose projects to remedy these.

All proposals will be published on an intranet site so that every commander can see and assess them. Every commander is assigned a 'sum/budget' that he/she can spend on projects. The small projects that have collected enough funds can take off. The initiator must use the collected budget to implement the project and share it with the rest of the community.

This system will sponsor small projects that most respond to the capacities and concerns of the commanders. The sponsors will closely follow the project leader, as they have invested in the project and will exploit the result in a useful way.

Although our view is of a financial nature, this reasoning can also apply to other resources like equipment, person-days, etc.

6. Coordination

"L'union fait la force" (unity equals power) especially in a complex process. Defence organizations need to develop capabilities considering a multitude factors leading to the necessity for a broad spectrum of different projects. This mix of small and large projects as well as the unique planning process must be coordinated. A high-level planning committee can be set up to guide this coordination effort and guard over the application of the principles and the use of patterns. This committee advises the CHOD on the acceptance of certain projects. Members of the committee act as coaches for the various projects so that the implementation of a project does not depend on the experience, or lack of it, of the initiator of lead.

The committee is also responsible for accepting 'dissident projects' that follow the letter but not the spirit of the patterns. The Committee therefore ensures continuous evaluation and for the health of the set of patterns.

The Oregon Experiment[4]

This problem of vision in a complex future is not unique to Defence organizations. With large infrastructure projects, it often happens that, when the last stone is laid and although a team of competent architects drew up the plan, the buildings do not meet the requirements of the users.

The University of Oregon (USA) identified this problem in the early 1970s and wanted to avoid it. It found the answer to the question of how to achieve this in the organic order found in some historic city centres. After all, these centres are the result of centuries of construction by different residents and yet they form harmonious units that meet the needs of the current habitants. Moreover, all that without a central committee that decides on budget and plans.

The builders of Oregon rejected the idea of a central 'master plan' because they were convinced that such a plan would never meet the expectations of the professors and the students once realized. They offered Prof. Christopher Alexander the opportunity to put his ideas about designing and building into practice.

This approach has also been successfully applied outside campus construction. There are examples to be found in an insurance company striking a balance between the

[4] "The Oregon Experiment" is a book written by Prof. Dr. Alexander and his staff and tells the story of a successful experiment within an infrastructure project of the University of Oregon (USA).

rising costs and the shrinking budgets, software development like Linux, knowledge software like Wikipedia, the planning guidelines of the UN... even within in the art of war this approach is not exceptional. Consider the functioning of the terrorist networks or groups of freedom fighters. Although they attack our democratic values, their function and flexibility are the result of the inputs and improvements of their methods proposed by individuals and local commanders, rather than those initiated by a central management decision of their 'leaders'.

The innovative aspect of this article is therefore not the approach itself, but the proposal to apply it to a main defence process: developing and maintaining capabilities in a participatory manner. We, as authors, think that writing this article is our contribution to improving that process.

Now, it is up to you to judge.

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Voormalig Amerikaans Defensieminister Donald Rumsfeld verklaarde tijdens de Golfoorlog: "You go to war with the army you have, not the army you might want or wish to have at a later time." Toch willen we als militair dat de capaciteiten die we in operatie inzetten juist die zijn die we nodig hebben, en niet die we gisteren nodig hadden. Niet voor niets is de kernopdracht van Defensie het bepalen en opbouwen van een goede portfolio aan capaciteiten dat een flexibel en goed antwoord op toekomstige inzetvragen toelaat. Traditioneel wordt dit kernproces centraal beheerd of, op zijn minst, aangestuurd. Een strategisch stafdepartement probeert zich een toekomstbeeld te vormen van de wereldsituatie en de mogelijke crisissen waarin we als Defensie zullen moeten optreden. De vastlegging van de vereiste capaciteiten start het proces van het verwerven en het onderhouden ervan waarbij gaandeweg meer en meer diensten betrokken worden.

Maar de uitspraak van Rumsfeld toont aan dat deze werkwijze zelfs bij de Amerikanen niet tot een bevredigend antwoord leidt. Dit op het eerste zicht simpel proces wordt in de ‘praktische’ uitwerking vele malen complexer: het toekomstbeeld blijkt niet te kloppen; de lange verwervingsprocedures resulteren in niet-aangepast materieel (wie herinnert zich niet de Hummers die met staalplaten ‘gepantserd’ werden?) en slokken grote delen van het budget op waardoor de nodige modificaties niet uitgevoerd kunnen worden. Doctrine blijkt niet mee geëvolueerd te zijn en ‘lessons identified’ leiden amper tot echte verbeteringen.

Gezien de complexe en snel veranderende omgeving waarin evenwichten tussen doctrine, organisatie, training, materieel, leiderschap, personeel, ‘facilities’ en interoperabiliteit (afgekort: DOTMLPFI) gevonden dienen te worden, mag het een klein wonder heten dat capaciteiten die we vandaag identificeren wel degelijk morgen als de ‘juiste’ ingezet kunnen worden. De uitvoering van onze kernopdracht beperken tot het werk van een team lijkt hopen op een goed resultaat, maar ‘hope is not a method[1].’

HOE KAN HET ANDERS?

Het is gemakkelijk om de fouten van een benadering bloot te leggen, maar een tegenvoorstel formuleren vormt echter een grotere uitdaging. Zoals Albert Einstein het mooi samenvatte: ‘Insanity: doing the same thing over and over again and expecting different results,’ kunnen we niet verder werken met het bestaande systeem en een beter resultaat verwachten, maar moeten we daarvoor een compleet ander pad bewandelen. We vragen dat je als lezer ons even volgt in onze redenering en dat je pas op het einde een oordeelt velt.

In onze benadering gooien we het intrinsiek statische, strategische plan overboord en vervangen we het door een permanent beslissingsproces dat vertrekt vanuit de actuele

[1] ‘Hope Is Not a Method’ is een boek van US Gen Gordon Russell Sullivan.

toestand. We omarmen de veranderingen die zullen plaatsvinden, maar weigeren voorspellingen te doen naar de aard en de omvang ervan. Iedere voorspelling gebaseerd op hedendaagse hypothesen is immers gedoemd verouderd te zijn op het moment dat de toekomst geleefd wordt.

Om dit concept in praktijk om te zetten, schuiven we zes principes naar voren. We bespreken ze hieronder door ze te confronteren met de huidige manier van ontwikkelen van capaciteiten. Dit maakt ze hopelijk tastbaarder dan een saaie theoretische uitleg.

1. ORGANISCHE ORDE

Dit principe maakt komaf met een 'vast' beeld van hoe de toekomst er zal uitzien. De toekomstvisie gegoten in een strategisch plan begint na een tijdje als waarheid beschouwd te worden. In dit plan werd gedurende jaren veel energie gestoken en is het gevolg van beslissingen op het hoogste niveau. Het moet dus wel juist zijn. Afwijkingen ervan worden uitgelegd en niet bestudeerd. We moeten echter vaststellen dat de toekomst geen plannen, hoe briljant ook, volgt maar juist de neiging heeft er van af te wijken. Als een plan niet voldoet, moeten we dan met lede ogen de toekomst passief afwachten?

Natuurlijk niet. De sleutel is niet te investeren in een robuust plan, maar in het proces dat onze toekomstige capaciteiten bepaalt. Tijd steken in het uitbouwen van het proces dat veranderingen detecteert en in staat is om hierop soepel in te spelen, is een veel betere investering dan te werken aan een 'beter' plan. Een goed idee ontwikkelen van het einddoel is ondergeschikt aan de capaciteit om vlot bij te sturen. In de veronderstelling dat een strategisch plan leidt tot een coherent geheel, hoe bekom je dit met een flexibel proces?

De beeldspraak van de groei van een bos legt dit principes goed uit. Er is geen centrale bosgeest die vertelt hoe de bomen en planten moeten groeien. Iedere boom zoek zijn weg in het geheel en zijn configuratie voldoet aan de toestand van vandaag. Door gestadige groei zal hij ook voldoen aan die van morgen. Natuurlijk zijn er hier en daar bomen die afgeknapt zijn of afsterven. Maar vergeleken met een kunstmatig aangelegd bos, is ons natuurlijk bos veel beter aangepast aan de toekomst.

Laten we nog even terugkomen op de 'sterkte' van een plan in het behouden van een coherent geheel. Op papier lijkt dit inderdaad zo, maar omdat de hypotheses van het plan na verloop van tijd toch herzien moeten worden, leidt dit tot wijzigingen (de afgeknapte bomen). Deze laatste zorgen ervoor dat de coherentie afbrokkelt, zodat het eindresultaat minder homogeen uitvalt. Ken je een grote, coherente organisatie als resultaat van de uitvoering van een strategisch plan? Wij niet.

2. STAPSGEWIJZE GROEI

De capaciteiten groeien stapsgewijs. Het ontwikkelingsproces is dus geen opeenvolging van alles-opslorpende projecten, maar een evenwichtig geheel van initiatieven, groot en klein. Deze laatste zijn even belangrijk als de eerste. Grote projecten die meestal het verwerven van materiaal voor (ver)nieuw(d)e capaciteiten inhouden, hebben immers de neiging om meer en meer middelen aan te zuigen. Het uitlopen van programma's, budgetoverschrijdingen, … gecombineerd met de hiërarchische slagkracht die dergelijke projecten ondersteunt, leiden tot een beknibbeling in de ondersteuning na de verwerving,

in het onderhoud ervan en in de investering van de huidige capaciteiten. De behoefte aan kleinere projecten stijgt, maar deze worden minder en minder gehonoreerd. Tot uiteindelijk alleen nog een groot project ‘redding’ kan brengen, maar daarvoor ontbreken dan de middelen.

Hoe zou dit principe toegepast kunnen worden? In een eerste stap moeten we bepalen wat een klein, middelgroot of groot project qua middelen binnen onze organisatie betekent[2]. Daarna moet het werkings- en investeringsbudget evenwichtig over deze groepen verdeeld worden. In het ideale geval gaat er evenveel geld naar iedere groep. Dit betekent dat er slechts een paar grote, meer middelgrote en veel kleinere projecten gebudgetteerd worden en dat de grote geen gevaar meer vormen voor de kleine. Verwerving in balans met onderhoud van capaciteiten, vernieuwing gecompenseerd door continue verbetering.

3. PATRONEN

Ons planningsproces kent geen chaotisch verloop. Het is gestructureerd volgens bepaalde afspraken of patronen. Deze patronen beschrijven de kern van de oplossing van een probleem dat telkens weer opnieuw voorkomt, op een zodanige wijze dat deze oplossing verscheidene malen kan toegepast worden, zonder ooit tweemaal hetzelfde te doen. Dit patroon wordt verwoord in de vorm van een instructie. Geen enkel patroon staat op zichzelf want het wordt ondersteund door andere patronen. De grotere patronen waarin het zit ingebed, de patronen van gelijke grootte die het omgeven en de kleinere patronen die erin zijn ondergebracht. Het zijn goede en uitgeteste benaderingen voor het strategische, operationele en tactische niveau.

Hoewel een patroon op het laatste niveau veel gelijkenissen met tactische doctrine vertoont, is het begrip patroon van toepassing op ieder DOTMLPFI-element. Immers, een patroon dat de samenstelling van een sectie beschrijft, beïnvloedt niet alleen de doctrine voor die sectie, maar ook het transportmiddel.

Het opstellen van een handboek met erkende patronen is zeker geen gemakkelijke taak. Het vormt het bijeenbrengen en consolideren van de gemeenschappelijke kennis die al aanwezig is en in de toekomst opgebouwd zal worden. Het vormt waarschijnlijk de grootste uitdaging in de toepassing van deze nieuwe benadering.

4. ONDERZOEK

Onderzoek naar het bestaande informeert over de aan de gang zijnde verbeteringen en legt de nood aan nieuwe projecten bloot. Het actief opsporen van mislukkingen, al dan niet door fouten, en het constructief rapporteren van minder goede toestanden is belangrijk om lessen te kunnen trekken en om verbeteringen te lanceren. Dit kritische onderzoek moet op regelmatige wijze herhaald worden of punctueel waar nodig geacht. Door goed onderzoek, belangrijker dan een grote visie, kan er zeer flexibel op veranderende omstandigheden ingespeeld worden.

De erkende patronen vormen de toetssteen voor dit onderzoek. Het is immers daar waar er van de patronen afgeweken wordt dat de toestand in vraag gesteld moet worden en

[2] Natuurlijk kunnen er meer dan 3 groepen bepaald worden.

waar er verbeteringen mogelijk zijn. Echter, met de nodige kritiek te bewaren tegenover de patronen zelf.

5. PARTICIPATIE

De basisgedachte voor dit vernieuwd planningsproces is dat de militairen die direct beïnvloed worden door het resultaat van het proces het best geplaatst zijn om het te sturen en dus rechtstreeks betrokken moeten worden. Naast het begeleiden van de cultuurverandering door sensibilisatie en vorming, moet het structureel zo zijn dat we de collectieve kennis en ervaring mobiliseren gedurende het ganse planningsproces.

Hierboven werd een andere opdeling van de beschikbare budgeten voorgesteld. Een mogelijke realisatie van de participatie ligt in het toewijzen van de fondsen aan projecten. In de categorie van de kleine projecten onderzoeken bataljonscommandanten onderdelen van capaciteiten en toetsen die t.o.v. de aanvaarde patronen. Bij het vaststellen van afwijkingen stellen ze projecten voor om hieraan te verhelpen.

Alle voorstellen worden jaarlijks op het intranet gepubliceerd zodat iedere commandant ze kan bekijken en beoordelen. Iedere commandant krijgt een ‘som’ toegewezen die hij/zij mag spenderen aan projecten. De kleine projecten die zo genoeg fondsen verzameld hebben kunnen van start gaan. De voordrager moet dan met behulp van de ontvangen fondsen het project verwezenlijken en delen met de rest van de gemeenschap.

Via dit systeem zullen de kleine projecten die het meest beantwoorden aan de capacitaire verwachtingen van de commandanten gesponsord worden. De sponsors zullen de projectleider van nabij opvolgen, ze hebben immers in het project geïnvesteerd, en zullen het resultaat nuttig exploiteren.

Hoewel ons voorbeeld van financiële aard is, kan deze redenering ook voor de andere kosten zoals materieel, mandagen, …

6. COÖRDINATIE

‘Eendracht maakt macht,’ zeker als het een complex proces betreft. Defensie moet bij de ontwikkeling van capaciteiten met veel factoren rekening houden en heeft dus nood aan een breed spectrum van diverse projecten. Deze kleine en grote projecten alsook het uniek planningsproces moeten gecoördineerd worden. Hiervoor kan er een planningscomité opgericht worden dat tot taak heeft het gebeuren te begeleiden en te waken over de toepassing van de principes. Dit comité adviseert de CHOD betreffende de aanvaarding van bepaalde projecten. Leden van het comité kunnen optreden als coaches voor de verschillende projecten zodat de uitvoering van een project niet afhangt van de ervaring van de voordrager.

Tevens heeft het de taak om ‘dissidente projecten’ die de letter maar niet de geest van de patronen volgt, toch te aanvaarden. Het comité zorgt dus continu voor de evaluatie en voor de gezondheid van de patronen.

HET OREGON EXPERIMENT[3]

Dit probleem van visie in een complexe toekomst is niet uniek voor Defensie. Bij grote infrastructuurwerken komt het vaak voor dat, als de laatste steen gelegd is en hoewel getekend door een team van competente architecten, de gebouwen niet voldoen aan de wensen van de gebruikers.

De universiteit van Oregon (USA) stelde begin de jaren 70 dit probleem vast en wou dit vermijden. Het antwoord op de vraag hoe dit te bewerkstelligen vond ze in de organische orde zoals die vast te stellen is in sommige historische centra. Deze centra zijn immers het resultaat van eeuwenlang bouwen door verschillende bewoners en toch vormen ze harmonieuze gehelen die voldoen aan de behoeften van de actuele eigenaars. En dit zonder een centraal comité dat beslist over budgeten en plannen.

De bouwheren van Oregon verwierpen hiermee het idee van een centraal 'master plan' omdat ze overtuigd waren dat dit plan bij de realisatie ervan niet meer zou beantwoorden aan de verwachtingen van het professorenkader en de studenten. Ze boden professor Christopher Alexander de kans om zijn ideeën betreffende ontwerpen en bouwen in gemeenschap in de praktijk om te zetten.

Deze benadering werd ook buiten ruimtelijke orde al met succes toegepast. Er zijn voorbeelden te vinden in de ziekteverzekering waarbij een evenwicht werd gevonden tussen de stijgende kosten en de krimpende budgeten, software ontwikkeling zoals Linux, kennisbanken zoals Wikipedia, de stedenbouwkundige richtlijnen van de VN, … Zelfs binnen de krijgskunst is deze aanpak niet ongekend. Denk daarbij aan de werking van de terroristische netwerken of de groeperingen van vrijheidsstrijders. Hoewel ze onze democratische waarden aanvallen, is hun werking en flexibiliteit voornamelijk te danken aan de inbreng van en de verbetering van hun werkmethodes door individuen en lokale commandanten, en minder door een centrale sturing van hun 'leiders'.

Het vernieuwend aan dit artikel is dus niet de benadering zelf, maar het voorstel om het toe te passen op een hoofdproces van Defensie: capaciteiten op een participatieve wijze ontwikkelen en onderhouden. Wij, als auteurs, denken met het schrijven van dit artikel onze bijdrage aan de verbetering ervan geleverd te hebben. Het oordeel is nu aan jou …

[3] 'The Oregon Experiment' is een boek geschreven door Prof. Alexander en zijn medewerkers en vertelt het verhaal van een succesvolle, experimentele benadering in het kader van een infrastructuurproject van de University of Oregon (USA).

How to Neutralise NATO?

Van Hoeserlande Patrick

A few months ago, in my article titled 'How to conquer a nation in 20 years?' I philosophised on slow war. My starting questions were: What if you were forced to take your time to conquer the neighbours? Say, your invasion must take 20 years; how would you plan it?

Later I wrote a food for thought paper, in Dutch, under the title 'What If the US Would Leave NATO?' In that paper I considered the whys as well as the scenarios of a possible US exit out of NATO. The purpose was to study this eventuality to consider the best course of action as a European nation member of the Alliance.

It didn't take long before my brain started combining the two thoughts. Not that I see the US willingly neutralising NATO, but there may be other parties interested in doing just that. The Russians are 'fighting' NATO with a hybrid strategy[1]. Although not a new approach, hybrid warfare has been defined as a combination of conventional, irregular, and asymmetric means supported by effective communications. Reacting to this kind of warfare is difficult for NATO as the activities stay below the criteria for an Article 5 of the Washington Treaty reaction, in fact below the threshold of Article 51 of the Charter of the United Nations. Others use terrorism, also not a new form of warfare, as the preferred means to stop the influence of NATO. The topic of counter-terrorism is therefore another hot discussion topic in the halls of NATO HQ.

It is a normal, military strategy to focus one's destructive energy on a weak member in order to break a coalition. But NATO is not a purely military alliance, although the armed pillar is a strong one. What if an adversary would attack NATO at the political level? Suppose the Russians combine their hybrid capability with the fundamentals of slow war to flip a member nation? It is sure not an impossibility! The expansion of NATO further increases this vulnerability.

How to flip a member nation is not the purpose of this article, I want to consider the 'What if a member nation flips to an adversary?' To make it really difficult for NATO, this change in regime should be done in a 'democratic' way. I purposely added single quotation marks to stress that it must not be a real democratic process as long as the perception is there, it will do the job. Creating that

[1] An article published under the name of Chief of the Russian General Staff Valery Gerasimov in the Russian newspaper Voenno-Promyshlenni Kurier in early 2013 initiated the belief that the Russian operation in Crimea (and subsequently in Eastern Ukraine) heralded the emergence of a new Russian form of "hybrid warfare," reflected in what has become known as the 'Gerasimov doctrine' or 'Hybrid Warfare'. This supposedly new form of war conferred numerous advantages on Moscow, observers argued, since it heightened the sense of ambiguity in Russian actions, and provided Russian leadership with an asymmetric tool to undercut Western advantages: since Moscow would be unable to win a conventional war with the West, it seeks to challenge it in other ways. Furthermore, it fits readily into Western debates about the increasing roles of Special Forces and strategic communications in conflict.

perception is just another challenge for the strategic communication element of a hybrid warfare opponent.

So, one morning the NATO members wake up to discover that one of them has a strange[2] affiliation. From that day on, that nation could block all initiatives against and support all decisions deviating efforts from its sponsor nation. This would be possible because of the coherent use of the (negative) consensus principle in the Alliance. How could they react?

Article 13 of the Treaty foresees the possibility for a member to quite the Alliance: "any Party may cease to be a Party one year after its notice of denunciation has been given", but that article does not make it possible for members to jointly expel a nation. So as long as a nation wants to stay member nothing can be done.

Of course, the others could work in a 'minus 1 format' but under the consensus rule, NATO as a whole would not be able to reach a decision. While some collective actions would be possible, the Alliance would soon turn into a hollow exercise.

The other option is for the other nations to quit NATO, but that would mean handing over the organization to the 'sponsor nation'. Quite an uncomfortable thought.

Is there a way out? Let's revisit the consensus rule.

The 'consensus rule' has been the cornerstone of NATO's decision-making process since the signing of the Washington Treaty in 1949[3]. However, the idea that all decisions reached within the Alliance must be agreed upon by all member nations is not directly mentioned in the Washington Treaty, or anywhere else in official NATO documents, but it has been the sole basis for decision-making in NATO since its creation.

Consensus is not just required for the most important decisions within the North Atlantic Council (NAC), but also throughout the structure of the organization, including (almost) every committee and working group. While sticking steadfastly to the consensus rule gives the Alliance a credibility on the world stage not seen by any other alliance in history, many experts and critics argue that this decision-making process should be reconsidered and adjusted. They argue that as the Alliance continues to grow and expand its geographical focus outside traditional European borders, the use of the consensus rule must be scrapped to keep the Alliance agile and adaptable.

The question here is not about agility or adaptability, albeit very important issues, it is about survival. The paragraphs above indicate that it is possible to circumvent the consensus rule because it is not an integral part of the Treaty. However a call for caution is in place here, a sudden deviation from normal practice could strongly undermine the credibility and an Alliance is as strong as it is credible. Also NATO has no experience with other rules for decision-making. Using these for the first time in a crisis situation could be very difficult and very risky. The learning curve would also give the sponsor nation extra time to execute its plans, whatever these may be.

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[2] I use 'strange' to keep my arguments general and not limited to one possibility.
[3] LtCol Lauren G. Traugutt, 'Is Consensus Still Necessary in NATO?', NDC Report, June 2016.

The positive news is that NATO can be protected against an insider scenario, however to execute it successfully the organisation should start thinking about the 'hows' of this kind of 'minus 1' decision-making process. And of course in the spirit of NATO Education, Training, Exercise and Evaluation, these procedures should be tested, trained, exercised and communicated. The latter is necessary as the simple fact that NATO considers the introduction of a non-consensus approach will certainly be useful in a hybrid strategy.

Resilience: a Sum or a Product Game?

Van Hoeserlande Patrick

Mid December 2015 during the Chief of Transformation Conference I had for the first time a discussion on resilience. One of my colleagues was preparing a paper on this new buzzword. As the drama at the centre stage was not that attractive, I couldn't help reading her first conceptual ideas. Soon we were discussing the topic, even after the conference was over.

Having the resilience to withstand shocks like natural disasters, failure of critical infrastructure, military or terrorist attacks is crucial to security and stability. Resilience is a society's ability to avoid, absorb and recover from these shocks without suffering complete failure through a combination of civilian, economic, commercial and military means. It is the power to return to the (near) original posture.

In February 2016, Defence Ministers of the NATO nations assessed the Alliance-wide state of civil preparedness and agreed on seven baseline requirements for national resilience. These cover sectors essential for the Alliance's security: continuity of government, energy, population movements, food and water resources, ability to cope with mass casualties, civil communications, and civil transportation. The quest for improving resilience is on.

Last week I attended a conference on resilience hoping that it would give me more insight on this topic. I was looking on how to enhance resilience of an organisation, of a population. My major question was if resilience would be enhanced when a big nation joins up with a smaller one?

The Individual Level

The seminar did not provide the answers I was looking for. I should have known it because the speakers were MDs, psychologists and consultants. Professionals interested in getting sick people or organisations better, most not concerned in how to improve one's health. It is not because the patient is no longer ill, that he is healthy.

At an individual level resilience is the ability to bounce back after a traumatic event or illness. It is clear that resilience has an individual dimension, an important one that influences the collective result. It is also interesting to look at that level in order to learn from it as a collective, the sum of individuals. Resilience seems to be greater when a person can combine 3 traits (the 3Cs): control, challenge, commitment.

- The more control we perceive – so it must not be real control - to have over the situation, the less we have difficulty to cope with it[1].

[1] The late Dr. Viktor Frankyl, a psychiatrist who was a prisoner in the Nazi concentration camp at Auschwitz, said the one thing that you cannot take away from a person is their choice of how they deal with the difficult situations which they find themselves in.

- Challenge is about how we perceive the events that occur in our lives; seeing our difficulties as challenges rather than as threats and accepting that the only thing in life that is constant, is change. If we view change as a total threat or see every difficulty we encounter as threatening to us then this is going to trigger a stronger 'fight or flight' response than if we see event as a challenge. Stress hardy people do not spend time ruminating over why things have to change, they are not frightened by it, they accept it as being a natural part of life, not a threat but an opportunity to learn and grow.
- Commitment means having a purpose. When committed to something we tend to be motivated to put in more effort and to be less distracted by external factors.

Reading the list above it is no wonder that people who are used to work in traumatic situations (like fire-fighters, military, emergency response teams) have drilled-in reactions (control), consider their work as challenging, and are highly motivated (commitment). For a society this means that in times of crisis its leaders must give at least the impression, through actions and communication, that they have a certain degree of control over the situation, explain that the situation is a crisis but also an opportunity, and demonstrate that they are committed, determined to solve it[2].

The Organisational Level

However within this article I want to limit the application to a military point of view although this does not mean that I will consider only resilience in the face of an external military aggression. Collective resilience must be analysed in regard to the resistance against such an attack (like a traumatic event at the personal level) and against a slow infiltration (an illness) like a disinformation campaign or a hybrid warfare strategy. Resilience is proactive in positioning the organisation to survive and thrive given known and unknown challenges.

Looking at the world and our history it seems that we are evolving to a global society that is less resilience. The ever increasing level of individuality with a higher attachment on life, of luxury with a higher dependency on things, of real-time connectivity through social media making remote crises personal, make people's perception of a high control on things prone to be shattered more easily. Resilience that came natural must now be built into organisations and societies.

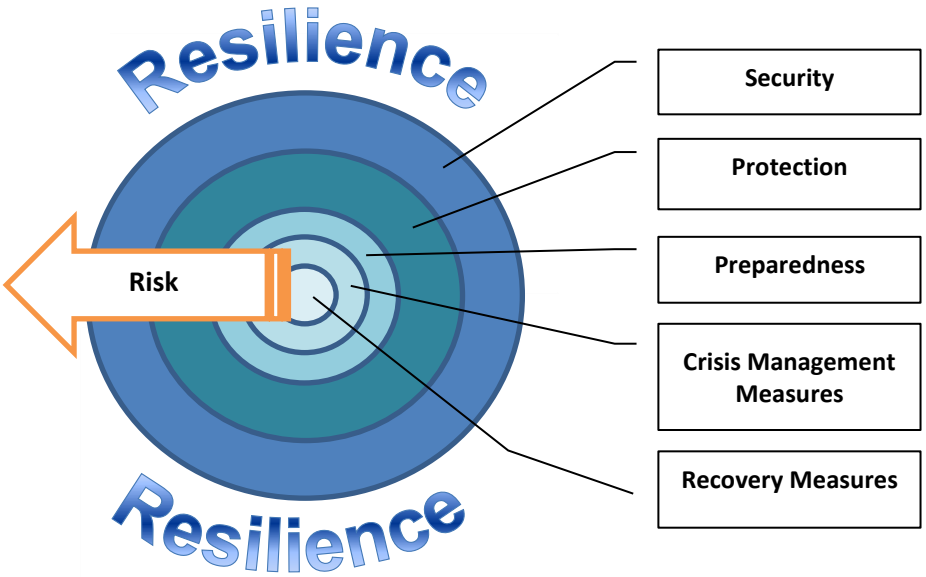
Although resilience greatly depends on effective crisis management it is enhanced by an integrated combination of approaches[3].

- **Risk management** consists of formal processes to identify threats and vulnerabilities (and opportunities), and the mitigation approaches it will employ. Risk management is moving toward a more proactive focus, but the traditional focus has been defensive in nature. Identifying and managing risks is arguably the most important factor in achieving resilience; however, it is one of many factors. Resiliency has a healthy consideration of posturing for future opportunities.

[2] Looking it a bit different at it, resilience is the combination of the preparatory work to fend off harm with the ability to start the first Plan-Do-Check-Act (PDCA) or Observe-Orient-Decide-Act (OODA) loop initiating constructive actions.

[3] Approach comprises aspects like preparation, documentation, education, training and exercise.

- **Security**, whether applied to physical, financial, personnel, cyber information or any other asset, entails the preventive measures against danger or loss. A significant breach in security could certainly impair an organisation's ability to exist, and thus is a critical concept underlying the organisation's capacity to be resilient. Security, as generally practiced, provides specific protection against identified or projected circumstances.
- **Protection** is often associated with the set of actions to harden assets to withstand identified contingencies, mitigate the damage, or make them a less attractive target. The focus is to maintain the assets' core function and ward off harm. Organisations plan for protection against specific threats or categories of threats. Resilience approaches the issue from a standpoint of taking reasonable protective actions, but having alternative capabilities as needed or the ability to withstand the disruption.
- **Preparedness** consists of the plans of actions for when the disaster or crisis strikes. Preparedness efforts are very specific sets of tactical actions (e.g. evacuation plans, sheltering plans, rehearsals, and stockpiles) that will be taken to mitigate the effects of predicted disasters/crises situations. Resilience requires prudent and serious attention to preparations for known likely disasters, particularly those that are highly likely. Resiliency would address preparedness as a specific emergency management business function; but more importantly, as being impacted by numerous functions across the organisation.
- **Crisis management measures** refer to the set of actions and capabilities in place to effectively respond to and contain a situation. The situation can vary from natural, man-made, or environmental challenges, whether internally or externally generated. Most consider crisis management to largely consist of actions that go into play when the crisis occurs and subside after it is considered 'over'. There are plans and preparations, but the actions are not often dealt with as part of normal operations. Business Continuity Management is a subset of crisis management as it focuses on the survival of the organisation as a precondition to return to normal.
- **Recovery measures** are tools and services designed to support the transition from withstanding the crisis treatment to recovery to normal business. This last part creates the capability to bounce back to a situation similar to the one before the crisis.



In short, this integrated approach lifts the 3Cs at an organisational level. It is about the perception of control through pre-planned measures to communicate and act, accepting change as a challenge by discussing action plans, and to take up the challenge by being committed to be prepared to deal with the worst, the unexpected, and the unknown[4].

Sum or Product

But what about alliances? It is quite intuitive that a smaller nation could increase its resilience by joining a big nation. Having more resources should result in being a harder target and an increased ability to bounce back. Right? Let's assume for the sake of discussion that this statement is true. Then, why would a big nation be interested in stepping into an alliance with a small nation? If the weakest link determines the strength of the combination, a big nation has no interest in joining up[5]. Or is resilience just a matter of adding up resources so that even a small contribution helps? Is the accumulation of resources the way to enhance resilience?

It would be in a one-dimensional world where danger is coming from one direction, but that is not how the real world looks like. Danger is lurking form all sides and on all levels of society. So, like in the Domino Theory of the Cold War era which held that if one country fell under communist influence or control, its neighbouring countries would soon follow, just adding resources is not the way to go. More of the same does not enhance resilience. This also means that being big isn't necessarily better. So what does the trick?

Having access to lots of resources certainly helps, but it is more important and useful to accumulate more options to react. The more, flexible answers, the better the chances to withstand all kinds of crises. Diversity in thinking patterns and approaches, the 'raison d'être' of jointness[6], combined with the willingness to learn from each other increases the success rate so elegantly expressed by Darwin's 'Survival of the fittest'. A big nation has an interest in joining up with a small one with a different culture. Diversity combined with a common goal is key to strong, mutually resilience increasing alliances[7].

Diversity to Enhance Resilience

Resilience, the combination of civil preparedness and military capacity, is a society's ability to resist and recover easily and quickly from crises. This ability can be enhanced by an integrated approach to stay in (perceived) control before, during and in the aftermath of sudden or continuous crises. The more different options in the portfolio, the better the chances of national survival (and recovery).

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[4] Measures designed to meet identified, known crises providing the flexibility in use are the only preparation for the unknown. Example: evacuation measures designed to evacuate a building in case of a fire, may be used for 'similar' dangers like an EOD in that building.

[5] Of course there may be other reasons (e.g. political, utility as a buffer) for such cooperation.

[6] Jointness as a true cooperation of different branches in the military, a 'Gentse waterzooi' and not a 'Stoemp'.

[7] A loose alliance may be a weakness instead of strength.

This broad spectrum of options can be achieved through diversity in thinking and approaches making intercultural alliances based on common goals key to enhance resilience.

On Chickens and Leadership

Van Hoeserlande Patrick

Writing on leadership for a public with a high percentage of experienced leaders is a challenge one should normally avoid. However, following the advice of the Polish poet Zbigniew Herbert “If you have the choice between two paths, an easy one and a difficult one, you must always choose the difficult one”, I’ll pick up the glove. Enjoying the unpleasant privilege of having time to reflect on the years gone by, I distillated some of the events that proofed to have an impact on how I see leadership and that I want to share with you. In the paragraphs below, I have summed them up in no specific order.

Keep It Simple

Recently a friend of mine suggested reading a book of a Nobel Prize winner. That was something new for me, as I related the writings of Nobel Prize winners with thick books on very specialized topics. I reluctantly started reading the small booklet, more a large article, ‘The Nature of the Firm’ written in 1937 by Ronald Coase[1]. It offered an economic explanation on why individuals choose to form partnerships, companies and other business entities rather than trading bilaterally through contracts on a market. I found it quite astonishing that he received the prize in the category economics, although it took the committee until 1991 to realize its value, for such a simple explanation.

The second book was from the hand of Herbert A. Simon and bears the title ‘Administrative Behavior: a Study of Decision-Making Processes in Administrative’. It asserts the simple concept that "decision-making is the heart of administration, and that the vocabulary of administrative theory must be derived from the logic and psychology of human choice”. Simon received the Nobel Prize for Economics in 1978.

Although, the two scientists did more than writing a book, they are known for forwarding their simple, yet powerful idea. The idea of another, better known prize winner[2], Albert Einstein is even simpler yet it has a huge impact: $E = mc^2$.

The lesson identified? Keep it simple, big ideas are.

So if you need to accomplish something, keep your basic concept simple. Its application will be hard enough. Having a profound understanding of the basics, the theory, gives you great authority on the matter as you can always retrun to it in times of troubles. Of course you sometimes have to adapt its implementation to real life, but having a well-understood foundation, no problem is too hard.

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1 See also ThinkBox ‘The Nature of the Military Organization’.

2 The Nobel Prize in Physics 1921 was awarded to Albert Einstein "for his services to Theoretical Physics, and especially for his discovery of the law of the photoelectric effect".

Quinn's View

If you wonder who Robert Quinn is, well he's a professor and a researcher and is well known as an authority in the realm of change management. His has gained fame by his groundbreaking work on the 'Competing Values Framework' (the Quinn model), recognized as the most effective way to describe a company's culture. The Quinn model is based on four different management models that form the basis of organizational effectiveness. The management models stand in opposition to each other, but each of them is important in a well-functioning organization.

I've used the Quinn model pur sang several times, and experienced that most chefs and the HR department had no understanding of it. The model is useful, but I find Quinn's approach more interesting. It tells that there are different possible angles to look at a problem. No point of view is wrong and all have their solution. Physicists know that too when they for example study light: is it a wave or a beam of photons? You could compare it with the facet eye of a fly. Every part gives an impression of the reality and only by considering the whole the insect will understand its surroundings.

The realization that there is more than one truth is enriching and leads to the readiness to discover the other facets. Is also explains how new approaches for management are popping up because they look at the problems from another angle but tend to forget to good solutions. This realization is also valid in regard to cultures. One tends to look at issues from one's culture and think there is only one possible angle to treat it, but there are more. Accepting that others may come up with equally valid approaches is very enriching.

The lesson identified? There is no single right, there are other truths out there.

Being able to understand and switch between different approaches, a bit like situational leadership, is a very useful capacity one should develop and maintain.

The Henhouse

Stories involving animals are an inoffensive way to illustrate lessons in management (or other domains for that matter)[3]. Early in my career a colonel for whom I have the greatest respect, compared my function as a flight commander with taking care of a henhouse.

To know how to manage the hens, you must divide them according a four-quadrant grid. The first axis of the grid concerns the productivity. In short you have hens that lay eggs and those that don't. The second axis is about the noise they make: some cackle, some keep quite.

Every quadrant houses a group of hens. In quadrant 1 you find the hens that lay eggs and cackle. You accept the noise and let them work. Quadrant 2 houses those that don't produce anything and cackle. These are the prime candidates for a chicken stew. The quadrant 3 hens lay no eggs and keep quiet are best for a chicken salad. However, as they do not cackle they are much harder to find than those in quadrant 2. The hens in the last quadrant are also quiet, but productive. Your mission is to find those and to take good care of them.

The lesson identified? Do not forget the hard, but silent workers.

[3] See also the ThinkBox story 'The Kingdom of the Grey Mice'.

According to this diagram, you will always have people who make noise. Whatever you do or change, there will be rumors and complaining. The group of cackling hens will make sure you hear them. So you don't have to worry about them or their noise unless they keep quiet. As a leader you should focus on the productive ones who don't complain or give comments, because this group needs extra care.

The Hammering Engineer

As with the henhouse, the following story also dates from my early days. It was a custom to start the work after the morning coffee. I considered those first minutes of the day as the ideal opportunity to meet my group to make sure that all understood the work of the day. However, on paper the time spend on the first coffee was time 'wasted' because no work was done. It so happened that my commander wanted to see work activity from the first minute. Not agreeing with his approach but determined to execute the order, I consulted with my section chiefs. I expected some resistance, but after explaining the wish of the commander they agreed that it would be done as from tomorrow.

Next morning, I was standing on the balcony overlooking the hangar. Next to me the commander. Just before the start of the workday, somebody opened a door and went from his shop to another across the open maintenance space. Somewhere we heard another engineer busy hammering. The commander smiled and said: "You see that it can be done."

I heard and saw the same things, but I did not believe it. Change is not that easy. I went downstairs to look for the working engineer and found him sitting in a helicopter pointlessly hammering on some piece of metal. He explained me that his chief had told him to make some noise before he had his first coffee. Then I walked to the shop where the first engineer had entered and saw him chatting with his colleagues. Not doing any work. After I told the chiefs what I had discovered, they explained me that, because the boss wanted them to be busy form the start of the day, they had come up with a plan to look busy.

The lesson identified? What you see (or hear) is not what you get.

You should always be careful with what you observe or measure. Certainly, if you request something without motivating the people to do it, you may end up with a nice looking but empty shell.

Grass Doesn't Grow By Pulling On It

If somebody is requesting an extra effort from a group of people, I always ask how he or she plans to motivate them. In most cases their answer can be summarized by 'they will do it'. But motivation isn't something magical out of thin air. I've got the impression that some people believe that pushing the function key F13 will do the job. News flash, there is no F13 on your keyboard!

Others will do efforts to get rid of demotivation. Probably because that's an easy way out giving a good feeling to the one implementing it. But like Hertzberg taught us, eliminating demotivation does not equal motivating a person. Not being ill does not mean having a good life.

Like grass, motivation must be cultivated. It doesn't grow by pulling on it. It needs taking care of. Provide it with fertile ground, treat it well, feed it, give it water … and you be rewarded with a nice green field able to resist harsh times.

The lesson identified? Motivating people is hard, continues work that few really understand, but it pays in the long run.

You have to motivate people to get them committed to change. The best change agents have come on their own to the conclusion that change is the best option. Maybe because the platform where they are standing on is burning or the white beach on the other side looks very attractive. Whatever the reason, they are internally motivated to swim the distance.

The Glass Door

Some organizations struggle with a glass ceiling. This kind of invisible stop on career advancement for women and minorities is known, although we have to admit that eliminating it is harder than it seems.

Like most leaders, I was aware of the existence of such a ceiling although at my level I did not have to worry about it. What I did not know was the existence of another blockage, the glass door.

My door was, and still is, always open. And that was also what I told everybody in my unit. They could always step into my office for a chat. If the timing was not right, I would tell them and fix another moment to discuss. My open door policy didn't mean that I always would act on what was told even if I could. No, I would start by informing the first responder to facilitate a solution if necessary and only act if all else failed. I trusted my policy worked fine.

After a meeting, a colleague made me aware that I had wrongfully blamed one of my officers because she hadn't received any guidance and as a newcomer lacked the experience to tackle the issue correctly. Accepting the critique, I asked why the flight commander hadn't stepped in my office to ask for advice. My door was always open. The reply was both simple and shocking: I was her commanding officer.

The lesson identified? Although you adopt an open door policy, there may be a glass door in the doorway invisible to you but very tangible for the members of your team.

Being made aware, I, supported by my direct collaborators, started an active campaign to promote the idea of the 'open door'. As for the young officer, I had a chat with her and started to coach her on a regular basis. The latter thing I, as her squadron commander, should have started from the beginning.

Who's the Group Commander?

While I was overlooking the activity on the work floor my Group Commander came next to me. After the usual greetings, he started telling the following story:

"The years as a flight commander are the best of your career. It will take you a year of two to learn the tricks of the job. In your third year you will reach full potential after which you will be transferred to the staff.

If you're lucky, after a few years they will send you back to a unit as a squadron commander. You will remember the fun times as a flight commander and now you return to at least three of them. A great time awaits you. After two years you will discover what the job of a squadron commander really is

about. You stop (micro)managing the flights and focus on the squadron. Unfortunately, your tour is almost over and soon you will return to some desk job.

Things are going well and you get the chance to return as a group commander. You now know the job of a squadron commander and are determined to make up the lost time. And of course, not one but three squadrons are awaiting you.

I ask you: who's the Group Commander?"

The lesson identified? Do not think that your new job is the previous one at the next higher level.

When I took up my job as a squadron commander, I've told this story to my flight commanders. Then I told them that I, like in the story, had a lot of experience in their function and that, although I know the story too, I will have the urge to do their job that I know so well. It was their duty to slap on my fingers the moment I played flight commander and to remind me that I was the squadron commander.

Epilogue

Of course, I have more moments with a lesson identified, and I'm not even sure if I have captured the most influential ones. There may be even moments that have influenced me more than I'm willing to admit or that I'm aware of. However, I hope that some of my moments will help to improve your leadership skills or that they initiate you to think about your leadership moments.

The Flip Side of Situational Leadership

Van Hoeserlande Patrick

Early Friday afternoon. A drink with the traditional speeches of all the good things the retirees did during their military career. Not a real inspiring moment. All are waiting patiently to do what they were coming for. After the first glasses are emptied and the chats out of respect and politeness are fading, the first people are getting out. Next to me stands a retiree from my class at the Military School. He states that the social gathering will not last long casually mentioning that compared to the 'old days' drinks nowadays do not last long. As he wonders why that is some enjoy a second drink. Soon there are more tables than people in the room. Unlike the furniture, we do not tend to stick long.

Leaving the drink with the last bunch, I pounder on his question. Leaving a social activity soon in favor of one's family is not a bad thing, but that is not an acceptable explanation as there is no evidence that military do love their family more now than then. The 'early leavers' must be a symptom for something else. Some think it is related to the waning 'esprit de corps'. While social activities should enhance just that kind of spirit, they fail. What went wrong? And how to stop it?

Before we start with a social experiment that may give a clue about what is going on, I need to refresh your knowledge on Situational Leadership[1]. The Situational Leadership Model was developed by Paul Hersey and Ken Blanchard, while working on Management of Organizational Behavior. It is arguably the most recognized, utilized and effective leadership and influence tool in the history of the behavioral sciences.

The fundamental underpinning of the Situational Leadership Model is that there is no single 'best' style of leadership. Effective leadership is task-relevant, and the most successful leaders are those who adapt their leadership style to the Performance Readiness, a combination of ability and willingness, of the individual or group they are attempting to lead or influence. Effective leadership varies, not only with the person or group that is being influenced, but it also depends on the task, job or function that needs to be accomplished and its relationship with the group's maturity.

A good leader develops "the competence and commitment of their people so they're self-motivated rather than dependent on others for direction and guidance." According to Blanchard, "Four combinations of competence and commitment make up what we call 'development level.'"

- D1 - Low competence and high commitment
- D2 - Low competence and low commitment
- D3 - High competence and low/variable commitment
- D4 - High competence and high commitment

The Situational Leadership Model serves as a framework to analyze each situation based on: the amount of guidance and direction (task behavior) a leader gives; the amount of socio-emotional support (relationship behavior) a leader provides and the readiness level that followers exhibit in performing a specific task, function, or objective.

[1] Experts may skip the following paragraphs, others just keep on reading.

The main consequence is that when a leader motivates followers properly, i.e. in relation to the situation, they will turn into better collaborators.

But this model has a flip side. Let's do a little experiment. Take a leader – of course in our experiment this person does not deserve that title – and some collaborators. According to the Situational Leadership Model a leader can enhance the performance of the individuals as well as the whole team by applying the right leadership style in relation to the skill level for the task at hand. Done correctly the team will evolve in the direction D1 to D4.

Once our team has reached the desired development level, we tell the 'leader' to use a style that corresponds to a much 'higher' development level. What will happen? The group will not evolve to that level, but will fall back to some lower level of performance. Its members will get frustrated and do a worse job. Improving a group is not done in quantum leaps, but in baby steps. You have to give them a reasonable challenge. Enough to be challenging, too much can be scary.

At an organizational level you can observe this transgression to a lower state too. If top management is driving a too big change, people tend to disengage and do less than business as usual. Disengagement is also the result when a strategic department is too far ahead of the normal approach. Yes, such a department should look into the future, but its advice must make a connection with today's real world to assure that the rest of the organization is following. It is like a rubber band, a good stretch will provide a pull, too much will cause it to break.

Let's go back to our test group. We ask the leader to use a style that corresponds to a 'lower' development level. Guess what will happen. Right, the team will fall back on a lower level. Not without trouble and interpersonal tensions, but that is besides the point here. What is important is that they will return to the level of the applied leadership style. This fallback does not mean that the individuals will unlearn the acquired competencies, but they will no longer use them and as a collective they will behave in relation to the style of the leader. According to Hersey, a leader's high, realistic expectation causes high performance of followers; a leader's low expectations lead to low performance of followers. Not convinced? I would not recommend actually holding the experiment but I'm sure when you reflect on it you will remember an instance of this kind of adaptive behavior in real life. Officers behaving like high school kids during staff courses?

Conclusion of our experiments is that to improve a group of people the leader must present a reasonable challenge to the individuals. Expecting too much will cause the group to drop to a lower level than they were. Expecting too less will push the behavior of the group to the lower performance level corresponding to the employed leadership style.

This kind of adaptation is also valid at the organizational and cultural level. The collective behavior is continuously influenced by daily actions. These influences can support or change a culture. Words, directives and speeches may be important but deeds make an indelible impression. A leader's actions, with emphasis on the occasionally unorthodox to make them memorable, are the ingredients that contribute to molding a company's culture. And in our case these actions should point in the direction of particularities of the military to sustain the 'esprit de corps'.

Unfortunately, budget cuts have opened the gates of a more managerial approach in favor of efficiency. Armed Forces are more run like a modern company[2] and less as what they are. Total Quality Management, Internal Control Systems … were introduced to help us to do more with less, or at least to do the same with less. But the way to hell is paved with good intentions. With the introduction of good management practices and its benefits also comes a shift in culture. The 'band of brothers' is slowly, but steadily replaced by a collection of human resources whereby resources need to be used in an efficient way. As Defense starts mirroring for-profit companies, military personnel start to behave like the bleu-collar workers who earn their money in factories.

[2] The fact that I wanted to use the word 'niche' in the former paragraph shows how deep this change has aleady affected my thinking.

There too, social activities are needed to ‘bond’ and attended as long as the end of the work day. Smart managers understand that a team is more than the sum of the employees and they refer to the military as an example. While they rediscover ‘teams’, we drift away from it towards a civilian mentality with some pockets of teamwork.

It is time to reconsider the desire to resemble a modern company in our way to do things and to focus on what we are: a military organization. An organization at the service of the nation(s) with a special ‘esprit de corps’ and a keen sense of effectiveness.

Howling With the Wolves

Van Hoeserlande Patrick

The Stories

There are a few stories about feral children who have been living completely isolated from human contact from a very young age on. Consequently they had little or no experience of human care, behavior, or, crucially, of human language. Some wild children were abandoned or ran away. Feral children are sometimes the subjects of folklore and legends, typically portrayed as having been raised by animals.

One of those stories, *The Jungle Book*, tells the adventures of young Mowgli a member of the Seeonee Wolf Pack. A cruel tiger named Shere Khan plots against Mowgli and the leader of his pack, Akela. When Mowgli grows up, he realizes that he must rejoin the ranks of men. Published in 1894, Rudyard Kipling's story proved to be a hit with young and old alike.

However attractive stories like that may be, there is little scientific knowledge about feral children. One of the best-documented but possibly fraudulus cases is that of the sisters Amala and Kamala, described by Reverend J. A. L. Singh in 1926 as having been 'raised by wolves' in a forest in India. But there exist other scientific studies of feral children.

About Wilk

One fairly unknown story is that of the human wolf named Wilk found in the old Białowieża Forest near the small settlement of Pogorzelce, Poland. The reason that it slipped almost into oblivion is that it paints a rather dark picture of the flexibility and adaptability of the human species. Thanks to the discovery in 2013 of the papers of the 19th century amateur-scientist Pietro Niedowierzanie and a forensic examination of the wolf pack's territory, a team of psychologists, forensic anthropologists and biologists were able to reconstruct the life of Wilk.

Let me take you back to 1859 the year a farmer shot an old white-grey wolf in the vincinity of the Polish village Pogorzelce near the now Białowieża Park Naradowy[1]. At first sight there was nothing special with this old leader of the pack, but back home the farmer found the animal a bit strange looking. He had a suspicion that the animal was something else than a common wolf, but he didn't have the knowledge nor the tools to find out what it was.

Through his friends he contacted Piotr Niedowierzanie the nearest person who had studied science. A few weeks later Piotr started his investigation. His first theory was that the animal was a new kind of wolf, but soon he realized that it was something strangely familiar. The corpse had the likes of a wolf: a very dark skin, long hooked fingernails, matted hair and calluses on his palms, elbows and knees, sharpened teeth. The corpse had too many humanoid characteristics to contribute it to

[1] The Białowieża Park Naradowy is one of the last and largest remaining parts of the immense primeval forest that once stretched across the European Plain. The forest is home to 800 European bison, Europe's heaviest land animal.

coincidence mutation. He soon postulated that the animal was nothing less than an old man. He started collecting related information and stories explaining what could have happened in support of his findings.

He paid the farmer for the corpse and rode back home. Unfortunately, on his trip he came in dire straits, lost his horse and had to abandon the corpse but not before taking notes on the whereabouts. Because other scientists did not believe him and said it was a fraud, he returned to the place. Although he searched for days, he did not find the corpse. Finally, he had to accept it was gone.

With the ultimate proof vanished, he lost all credibility. With his death also died his discovery. Until, in 2013 his grave had to be removed. After opening his small tomb, his papers were discovered. He had taken them to his grave to prevent embarrassment of his family while hoping one day people would discover the truth.

A year later, a special team found, by accident, the corpse of the old wolf not far from the place described by Piotr. The scientists were surprised and the result of their study was too shocking to be widely published. Thanks to their effort we now have a good idea of what most probably have happened.

The story starts around 1900 during late winter when a farmer family travelling through the woods had an accident with their wagon. For some reason they slipped into a deep ditch killing horse and both parents. The place of their misfortune was at the border of the territory of a wolf pack. The wolves were attracted by the opportunity of an easy meal and approached the family. Although they fear humans and are sometimes aggressive towards people, it is not abnormal that do no harm to small kids. So, the twins must have survived the accident and been taken away.

The two boys were raised like cubs receiving warmth and giving milk from a she-wolf, maybe even more than one. Having no humans to copy the children started to adopt typical wolf-like behaviors and reactions. Both, the pack and the kids, must have felt that something was not right, so, although they were near-perfect there must have been a confrontation between human and animal nature. No doubt that one of the boys lost his life in exchange for his brother's valuable lesson: conform or get killed.

Wanting to survive and knowing no other way than to stay with the pack, Wilk fully embraced the life of a wolf. His behavior and social interactions were a copy-paste of the members of the pack. The truly amazing thing was that through his behavior and posture, his body also started to adapt. These adaptation were more than the result of the lack of normal human hygiene, he really morphologically evolved towards the features of a wolf. His canines became elongated, his eyes started to shine in the dark, hair appeared all over his body … After many years, he walked, behaved and looked like a real wolf. Because of his intelligence and long-lividity he became a natural leader of the pack. Although he must have been powerful, he was certainly not the strongest amongst them, but his brain gave him the upper hand.

Epilogue

Why is the study of the life of Wilk that dangerous? The conclusion goes against common belief and does not paint a nice picture of evolution. The human body and mind are very flexible, but that is not

always for the better. Most people implicitly think that humankind evolves to something better and that we cannot degenerate into something worse. According to the general belief a human being cannot evolve back into an animal, but Wilk proves they are wrong. We tend to adapt behaviorally and physically to whatever environment in a much faster way than Darwin predicted.

If a person can turn almost completely into a wolf by staying with a pack, how long can somebody stay unaffected by a corporate culture? How long can you howl with the wolves of your organization without turning into one?

e-Learning: Towards a Technology Enhanced Learner-centric Platform

Van Hoeserlande Patrick

The annual Training Synchronisation Conference (TSC) is a great opportunity to reflect on education and training (E&T). Not only on its application in a NATO context, but also on a more fundamental level. The search for better E&T is never over. Unfortunately, it takes more than new ideas and concepts to take an innovative leap forward. We tend to use a new development for the improvement of old ideas resulting in small improvement steps and an undervaluation of its full potential. I think it's our lazy human nature that slows down our critical thinking[1]. Anyhow, a conference exposes one to a myriad of ideas and can stimulate creative thinking by trying to combine them.

NATO's Training Spectrum (Figure 2 & Figure 1) is divided in four discreet areas, i.e. Education, Individual Training, Collective Training, and Exercises. Proficiency at the collective level requires forces, often joint, to engage quickly and to integrate their capabilities across domains, echelons, geographic boundaries, and other organizational affiliations. Since the individual's preparation is a prerequisite for collective effectiveness in the execution of tasks, individual and collective training must be viewed as a closely interconnected continuum.

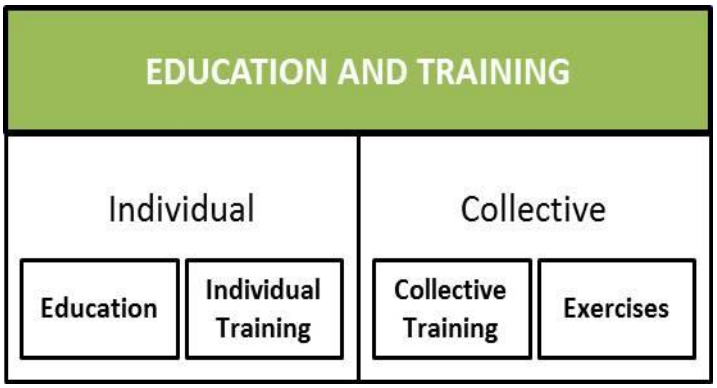

Figure 1 : The NATO Training Spectrum.

During the Training Requirements Analysis, a step within the Development Methodology, the tasks are examined in greater detail and further refined into Audience, Functional Area, Task Performance Statement, and Proficiency Level. The combinations of these 4 elements for every task result in the

[1] See also Daniel Kahneman, 'Thinking Fast and Slow'.

individual and collective E&T requirements. These requirements are eventually matched to existing (or to be developed) E&T opportunities[2].

One type of E&T opportunities is e-learning. Within the E&T community this is considered as a contemporary tool that receives too little attention. It seems that the solution providers (i.e. school, centers of excellence, training institutions …) are not really keen or able to increase the production of this kind of courses. To their defense they bring forward arguments like not enough specialists to design e-material, need for hands-on experience, IT-infrastructure not adapted to this kind of teaching … All valid arguments, are they?

It is not that this is a recent struggle. No, it's a yearlong fight to get e-learning off the ground. To me that means the current paradigm is blocking progress. Unfortunately, I could not point at the origin of problem - as an engineer I have the instinctively desire to search for the ground cause of the problem – so I followed the speakers in their arguments. In my mind's eye I was looking at all the brought-up mischiefs on the crime board for the silent murder of e-learning. The battle was lost and I didn't see a way out.

The session on Artificial Intelligence (AI) in E&T gave me the first glimpse of a possible escape from current thinking. I've been reading a lot on AI lately, so there was nothing surprising about the briefings. 'AI could increase the interactions and make the current course more attractive' was the message entering my mind. AI to improve our current way of teaching. But during the Q&A, a speaker stated that AI makes it possible to manage complexity. A simple statement quite certainly lost to most of the attendees, but my brain captured it and kept it alive. The seed was there, but I was not sure what it needed to mature.

Some hours and coffees later in a session on e-learning, there was an example in which a company had left the brick and mortar approach to training by going full throttle for e-learning. Hands-on learning was replaced by e-learning combined with sending a box to the student's home. The student didn't have to go to a school lab. No, the part of the lab needed for the course came by FedEx to the e-student. Innovative.

The current construct of E&T began to fall apart. Not sure what initiated the process – our brain is, like AI, still a black box -, but suddenly I started to doubt the foundations of our current model. If a company can do that, what was stopping us, the military, to do the same?

A few moments later, the concept of micro-learning was introduced. I was not familiar with it and it sounded promising. Microlearning deals with relatively small learning units and short-term learning activities. Microlearning refers to presenting learning in short nuggets of 3-5 minutes long (or even shorter), with a specific focus, to meet a specific learning objective. It appeals to the learners as it consumes less time and is available to them exactly at the time of the learning need (just-in-time learning). Furthermore, its rich media formats ensure better retention. Examples are - but not limited to - gamified, scenario-based learning short videos; interactive PDFs/e-books; and Infographics. Microlearning holds the promise to be cheaper to build, quicker to deploy, and can be updated fairly easily.

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[2] E&T opportunities may come in different forms: trifold, webpage, course, On-The-Job training, exercise …

Microlearning could be the future of learning as modern learners are hard pressed for time and their attention span is short. They want bite-sized information that is focused, and can be absorbed on the go, at any point of time, on any device. To achieve this desired result, microlearning must be efficient and engaging. The design has to be visually appealing and the content precise, leading to the rapid attainment of expected learning outcomes.

In the exposé, in line with our lazy nature, microlearning was used to improve the current idea of e-learning. It was viewed as just another way to do better what we are doing now. But I was lost to the discussion. A new idea was starting to form. But first I had to destroy the current approach.

Once all pieces fell in place, it was easy to see what was wrong. The current E&T model, although successful in the past and present, held inherent limits that would not be overcome by these new ideas. We approach E&T from the side of the teacher and mistakenly use the term e-learning while it should be called e-teaching. Courses, although made with the best intentions and at great effort, are nothing more than a blueprint synchronized to the dumbest kid in the 'classroom'. Why should you follow a 50 minutes course if all you miss can be explained in 5?

Teaching lays the responsibility of almost every aspect of E&T on the shoulders of the solution provider: certifying based on attending all elements of a course – sometimes just being in the class is enough to get your certification - ; assuring quality by setting up an educational system certified against a specially developed set of quality requirements; organizing the post-course performance evaluation dictating time and place to the students; developing a business model that can turn the design and provision of courses into a profitable activity ... Rapidly, whatever the mission statement of the school may preach, all E&T centered activities become institution centric. Trying to fit e-learning into a teaching-centric environment is like fitting a square peg into a too small round hole. You only succeed by force resulting in a deformation of the peg.

Let's redesign the hole by shifting our focus to the individual student.

Suppose an individual is interested in learning to be able to perform a task. I know this is a very utilitarian approach to E&T, but as you will discover it is necessary to design the system but the result does not exclude a more existential approach to learning. The task to perform may vary in nature and complexity. The initial interest must come from the individual as you cannot force a human being to learn non-life-threatening responses. The individual is the starting point, but I'm confident that once we have the desired system up and running, it will be able to cover group learning too.

To perform a task, an individual must meet certain performance requirements. These requirements must be broken down, a bit like a tree diagram, into very small microrequirements that can be met by microlearning modules and, one way or another, tested against. The learner starts his/her path to meet those requirements with an 'exam'. This exam must determine the set of microrequirements missing in the present skill set. Every identified gap will be filled by presenting the learner with a specific micromodule. That module is not only a solution for that gap, but also the way how (and even the time when) it delivers the learning moment depending on the individual it targets. A game, a video, a text message … may all deliver the same message depending on how and when the student learns.

Of course, the exam must not be considered as a whole; it should be distributed throughout the learning project. It is no pass-or-fail. It is a continuous evaluation of the performance to offer the right micromodules at the right time and in the right format. This way the student is continually (re)evaluated and presented with the right modules until he/she reaches full compliance with the desired performance requirements.

The creation of such a tree of microrequirements with multiple microlearning solutions will be hard to develop for one student, let alone for a group. In contrary to a classroom course that needs to be fully developed before delivery, there is no direct need to develop the whole tree or all solutions before it starts. Students will come with some competencies and thus the corresponding micromodules are not needed in the beginning. The complexity increases further by adding more learning paths for other tasks using some of the existing modules. It soon becomes humanly unmanageable.

And here comes AI into play, it can manage this complexity. While drifting towards complexity and having found a capable manager, we are ready to fully open up the system. Forget the E&T institution as you know it, welcome to the new E&T solution provider. Everybody is able to provide a micromodule to answer a microrequirement, as long as he/she has the necessary competence on the subject and access to the necessary tools. AI doesn't only guide the learners towards the modules they need to assimilate, but also the teachers towards the requirements they may help to solve. Every individual becomes a teacher-learner.

What about the control of the quality of those modules? Due to the ease of making, quality is not an intrinsic element of a module, it is inspected out. A bit like the selection of YouTube videos, a module is of high quality when it provides a solution to a requirement – this can be tested by the AI macro-assessing the continuous evaluations – that is popular amongst the targeted types of students. Once it passed a certain quality threshold, the AI can offer that module to a student based on his/her typology. The system can even guide the solution for specific requirements based on specific media to the best-suited high quality 'teacher'.

I acknowledge that not all can be learned by games, simulations, videos … sometimes you need good old hands-on experience. Here is where an 'institution' can play its role. They can bring people and specialized material together to interact. An 'institution' is not necessarily a school, it may well be a factory equipped with the right machinery, or a community meeting room … If managed the right way, the interaction can be done in a flexible manner suited to both learners, teachers, and infrastructure.

A single microlearning module cannot be used to convey a complete lesson. However, several such modules (with each one undertaking a specific learning point), can be successfully used as supporting pillars for a full-fledged e-learning course. The next generation of AI, able to manipulate graphic media, can manipulate human-made material into just-in-time packages. A series of modules made by different teachers targeted at filling a student's gaps are on-line transformed into what looks like a succession of homogenous modules. If a student needs a break from a longer session, no problem; the system will take that into account.

The step from individual learning to collective learning in this system is a minor one. As the competency levels of the individuals are well-known by the system, the individual paths will bring

them to the level necessary to function as members of the team. Once that is reached, the synchronization is again done by AI in a way that individuals do not slow down to the rate of the 'slowest' learner, the team is approaches as an 'entity' – akin an individual - that needs to be brought to a predefined performance level. That path can be changed when needed (new member, losing a member, changed task …). As the distinctions between the different areas of the E&T spectrum fade away, the bridge between the individual and the collective side becomes a continuous spectrum of true lifelong learning.

Is there a business model that supports this new approach to learning? Not being an economical expert, I'll try to answer that one too. Imagine a company introducing a new product line in need for E&T for its employees. Instead of hiring a company to develop a course, they go for a technology enhanced solution and engage a learning platform. That platform is paid to guide employees towards a predefined performance level. Once the contract is signed, the employees start their paths. Every path may be different depending on the individual's learning preferences and acquired competencies. The platform may have some specialized teachers that will support the development of specific modules, but other members of the platform will also be challenged to develop specific solutions. If these teachers accept a request and their product is of high quality, they'll receive course points that in turn can be exchangeable for micromodules for their own learning needs (or why not for other things).

This concept may read like science fiction, but most elements are already out there. Just add a few links that are not there yet and it is up and running. The challenge will be to find a visionary entrepreneur who brings it together to build the first technology enhanced learner-centric platform.

Figure 2: Photographic Representation of the NATO Training Spectrum.

Save Lives

Van Hoeserlande Patrick

Let's go back to 2018, the year NATO started to discuss disruptive technology and the use of robot-soldiers. While the military saw advantages in the use of these new technologies to lessen the effects of the decline in recruitment, the political level was rightfully concerned about the political and ethical implications. While the politicians tied to make sense, most nations were developing national applications and gaining experience with the use of these new possibilities. After a lots of meetings at all levels supported by simulated experimentations, it became clear that the modified 'Three plus one Laws of Robotics' devised by the science fiction author Isaac Asimov where not adequate for fighting robots1. Although this and other sets like the 'Ten Principles of Robot Law' formulated by Osamu Tezuka were not fit for this new kind of warfighting, they formed a pretty good starting point. Reaching a consensus on the right set of rules was not easy, but months of hard work and lots of behind the scene negotiations, resulted in a set no nation objected too.

Listing up all rules would be too cumbersome, but one was particular important, although it was the last one added to the list: 'Save lives'. The use of robots should result in less destruction of human livesthan would be the result of direct human interaction; in short they should save lives. In every situation wherein a robot, or a collective of robots for that matter, had to choose between different potential actions to execute its mission, saving lives should be the final guiding rule. A rule all could agree on and support.

The dissemination of the agreed on set stimulated the development of robot-soldiers because the decline in the availability of the human version in the Western world continued. At first, the robots were under human control making the human-robot interface the technological challenge, but little by little the level of decision-making by artificial intelligence based technology was increasing. Swarming was no longer limited to small machines but also introduced to a collection of Unmanned Fighting Vehicles.

Whatever the enthusiasm for those robots might have been, its deterrence effect was the most important outcome. Although the smaller, specialized robots were used all over the world by all involved in conflicts, the bigger ones were not yet within the realm of smaller organizations and the nations that had them were very reluctant to use put them in use. There were too many unknowns.

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[1] The Three Laws, quoted as being from the "Handbook of Robotics, 56th Edition, 2058 A.D.", are:

1. A robot may not injure a human being or, through inaction, allow a human being to come to harm.
2. A robot must obey the orders given it by human beings except where such orders would conflict with the First Law.
3. A robot must protect its own existence as long as such protection does not conflict with the First or Second Laws.

Asimov also added a fourth, or zeroth law, to precede the others:

0. A robot may not harm humanity, or, by inaction, allow humanity to come to harm.

One of those was the fear for bugs and there unintended consequences. Millions of human and machine produced lines of code and the mystery of the way how Artificial Intelligence really worked, resulted in withholding from direct confrontation between the big powers. There was a high noon stand-off situation whereby nobody wanted to shoot first. They had no idea on how the other side's robots would act in a mixed human-technology environment. In a kind of unspoken understanding, nations deployed these machines to regions where that kind of interaction on the battlefield would be minimal: inhospitable regions with little local human activity where guarding the other side became the boring job of human and robot-soldiers. Afraid of the unpredictability of the other side's reaction in case of an intrusion, these borders remained calm and much safer than those lines surveyed by humans alone.

By 2025, the fear for bugs had spurred the science of self-improving software to competitive, high-performance levels. All sides started producing and deploying the first generation of soldier-robots with this kind of software. By swarming up this new generation robots, the collective was able to improve at the speed of light. Improved tactics by one element was instantaneously copied and implemented in all members of the network. Fixing bugs was only the first step, collective learning and flash application of lessons learned, on impossible human dream, became reality with robots.

The number of scholars warning for the possible outbreak of an uncontrollable all-robot war was growing. Without knowing for sure that the rule was hard-wired in all robots, NATO members, partners and even potential adversaries contradicted those pessimists with 'save lives'. Pointing to the safety and importance of the frontiers, politicians convinced there populations of the necessity to deploy the new generation.

A few months ago, on July 21st the Afghan incident with an operational employment of a prototype silenced even the most vivid critics. During a patrol the prototype, called 'George' by the members of the platoon wherein the robot was integrated, sacrificed himself, after first stopping the armored vehicle directly following him, by placing himself as a shield to fend off an incoming missile. Investigation concluded that the missile fired from a terrorist hideout would have hit the platoon leader's vehicle if it was not stopped by George and missing the car it was heading towards a house occupied by an Afghan family. George's AI had concluded that instead of going for the terrorist stopping the platoon commander's vehicle and protecting the family house would save lives, not only at that exact moment but also in the long run. A sacrifice made based on the 'save lives' rule. It was a high moment of robot ethics and it didn't take long for George to become the first robotic war hero. A media opportunity brilliantly used by politicians and military alike to deafen all critics. If an isolated prototype did such heroic acts, how positive would be the outcome from a swarmed collection of the new generation of robots?

December 15th, 2025 an incident between a Chinese and an American men of war ends in crippling damages to both ships. As a precaution the two nations and their allies deploy huge fleets in the Aziatic region. The fleets are still performing their dance of death.

Three days later, a Russian robotic submarine comes too close to the only British carrier and after a daylong hunt is sunk by a killer drone. The Russians claim that a bug caused the dangerous behavior of

their unmanned underwater vehicle, but the British convince their NATO allies that this was an intended breach of protocol by the other side to test their defense systems. They also have proof that the submarine self-detonated just before the impact of the killer drone ensuring that there was nothing left to investigate.

On December 20th a NATO patrol gets lost in a terrible ice storm on the Northern border. They end up in the zone between the two guarded lines. Thinking the other side is testing their defensive posture, the Russian commander engages his robot-soldiers. Soon the patrol is in dire straits. Not sure which way is towards safety they call in for help. Ammunition slinking to dangerous levels they need help soon. Within a few minutes the first deadly wounded soldier is a fact.

It doesn't take long for the NATO commander to understand that doing nothing is not an option. Having no experience with a full robotic response, he decides to engage with a mixed team. Having pinpointed the place of the high pitched battle, the quick response team hurries towards their brothers in arms. The extreme weather conditions make it a hard job, but they are able to reach and help the lost patrol. The platoon commander decides to use his robots as a first line of defense providing cover for his soldiers to retreat. The tactic seems to work. For a while.

The NATO troops are in full retreat, their robots doing their best to fend off the Russian technological counterparts. They also form the first line, the first line of attack. Robot against robot. Suddenly, the Russians robots change tactics and start circumventing the defensive posture of their enemies and killing them off one by one.

The platoon leader observes this change and assesses the situation as extremely dangerous. At this rate he will not have time enough to reach safety and the Russian robots are stepping up the pace. He sends an urgent message to the Battalion commander to do something, now. In the command post they are fully aware of the situation through the real-time battle management system.

"Why are we losing robots?" wonders the commander.

"Our robots are not interconnected like the other side. You saw the sudden change in Russian tactics. I guess that in the beginning their robots weren't interconnected either and that they have just changed that because they don't like to lose. From that moment on their robots learned as a collective," the operator answers.

"Why are our robots not learning faster than that Russian junk?"

"As a safety precaution they are not interconnected and thus slower, but you have the authority to override that, sir," explains the robots expert.

"Sir, the platoon commander is again requesting immediate action because he's losing men and robots," intervenes the tactical advisor.

"Do it," orders the commander after a quick mental assessment of the combat situation. He is not willing to risk more human soldiers to cold fighting machines. His troops may show affection towards

their human made team members and give them names, but he feels only responsible for the mission and the flesh-and-blood soldiers.

“Yes, sir. Consider it done,” is the quick answer of the operator. She had considered explaining the reasons for this specific safety measure, but appreciating the situation refrained her from doing it.

Farther away, the platoon commander senses the change in the situation. His robots start to learn at a much higher pace and he sees that they are collectively using the ever-improving tactics. They learn while fighting, and they learn fast. The Russian robots are being knocked out one by one. His first line is not retreating any longer. It starts to advance a little bit. His sees his platoon may have a chance to make it after all.

But his hopes are soon destroyed. His platoon sergeant drops deadly wounded in front of him, he realizes something is going wrong again. He yells “Something is wrong with our bots!” in his communication set.

“We see it too!” is the quick reply from the command post.

“Wheat is going wrong,” asks the commander with his harsh voice.

It doesn’t take the operator long to come up with an answer.

“A bug is blocking the coordination between our bots slowing down their reaction,” she answers.

“Solve it!”

“I can’t, sir.”

“Why not?”

“I can, but it will take too long and the battle will be lost before I can fix it.”

“The general asks if he can be of any help,” it is the young lieutenant, the liaison officer of the higher headquarters. It is his job to inform the joint operation center and he had just done that. The commanding general appreciates the situation as grave enough to be personal involved.

“Not for the moment,” the battalion commander replies.

“Excuse me sir. We might need his help.”

“Hold on lieutenant. Explain.”

The robot expert starts to explain:” The general can give his authorization to initiate the self-repair mode. That way the robots will be able to fix the bug themselves, but …”

“The general agrees,” confirms the liaison officer.

“Do it!”

Considering explaining the unknown territory they are on the verge of exploring while being in a real combat situation, she executes without delay the order. The software requests the authorization code and the confirmation to continue.

“Let’s hope,” she says with a prayer-like voice.

AUTO-REPAIR INITIATED reads the screen.

It doesn’t take long for the auto-repair mode to have a major effect on the battle. Within 10 minutes the Russian bots are destroyed or incapacitated. Through the eyes of a forward bot they all see the amazing results. The battle is over. Only a matter to round up the Russian soldiers or better, to let them retreat to safety. It is best for every side to be able to deny the event and to learn the lessons from this ‘did not happen’ incident.

“Oh no,” the operator speaks silently wishing that what she sees is not happening.

“What’s the problem?” asks the platoon commander via the secure radio.

The screen shows a figure labeled as “unarmed Russian soldier” moving towards a robot.

“What is he doing?” inquires her commander.

The tactical chief responds by saying: ”As he’s unarmed and no danger to the mission our bots will do nothing unless the platoon commander orders them otherwise, but he’s going to help his robot. Like our soldiers they too consider them as part of their team. Leave nobody behind, you know.”

“And we have no idea how ours will react to that,” completes the robot operator.

“Can we do something about it?” wonders the commander.

“Not sure sir. The bots are in autonomous self-repair mode and as long as their mission is not over, there is nothing we can do. The only thing is to hope that …”

The Russian soldier is by now next to his technological team member and performs some manipulations. The Russian ‘George’ comes back to life and restarts his mission. It doesn’t last long before soldier and robot are taken out. The immediate threat is eliminated but the evil is done. Soon the allied swarm concludes the mission is not over until their group is safe or all Russians, armed or not, human or robot, are neutralized. They have to ‘save lives’.

“Retreat as fast as possible,” yells the colonel through his communication sets, although he knows that his advancing robots will reach the Russian camp first. No other option at hand, he feels that the events are out of his control.

Meanwhile the next shift came in, ready to help.

“Yes, we can try it,” replies the experienced robotic expert to his female colleague. The expert on duty stands up to give space to the incoming expert.

“What’s going on?” asks the commander.

“Sir, we will try to give the bots a new mission.”

“You told me that was not possible because they are in auto mode.”

“Correct, sir, but we will use an old prototype as entry point. Although that robot can be interlinked with the others, it doesn’t have a self-repair mode. Once linked, it could theoretically change the group’s mission without the risk of being dragged into the current ‘kill to save’ mode.”

The screen shows the forward group reaching the perimeter of the camp and preparing to ‘safe lives’. His platoon is within minutes of safety, but his robots can make undeniable havoc in a very short span of time. He really doesn’t like that all depends on a theoretical possibility. He has no other option can to watch and hope.

“Here we go,” yells the old chief while pressing the enter button.

“Let’s hope,” the younger one answers.

“Let’s hope,” concludes the commander.

Outdated Capabilities?

Van Hoeserlande Patrick

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.

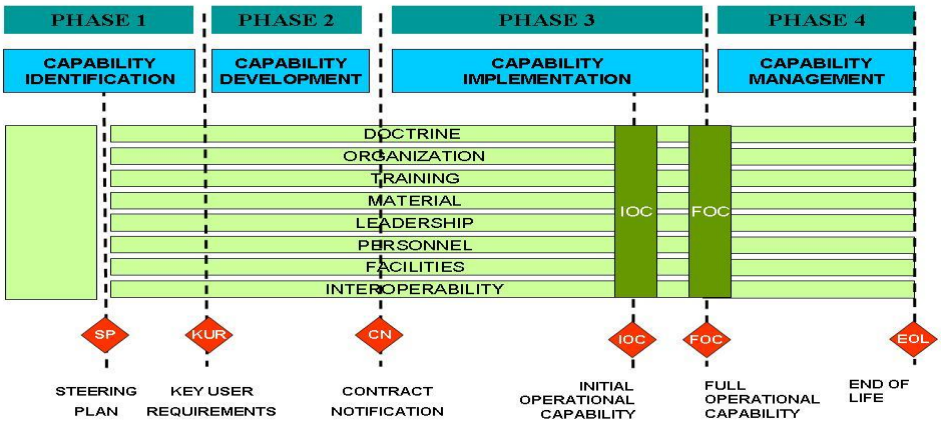


Figure 1: Phases of the Life Cycle of a Capability

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.

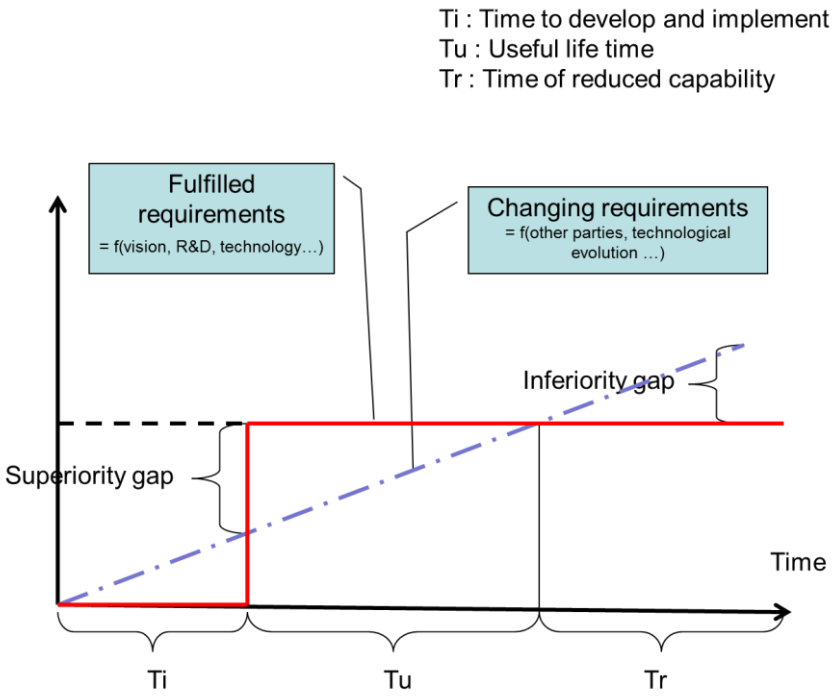


Figure 2: Evolving Requirements

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.

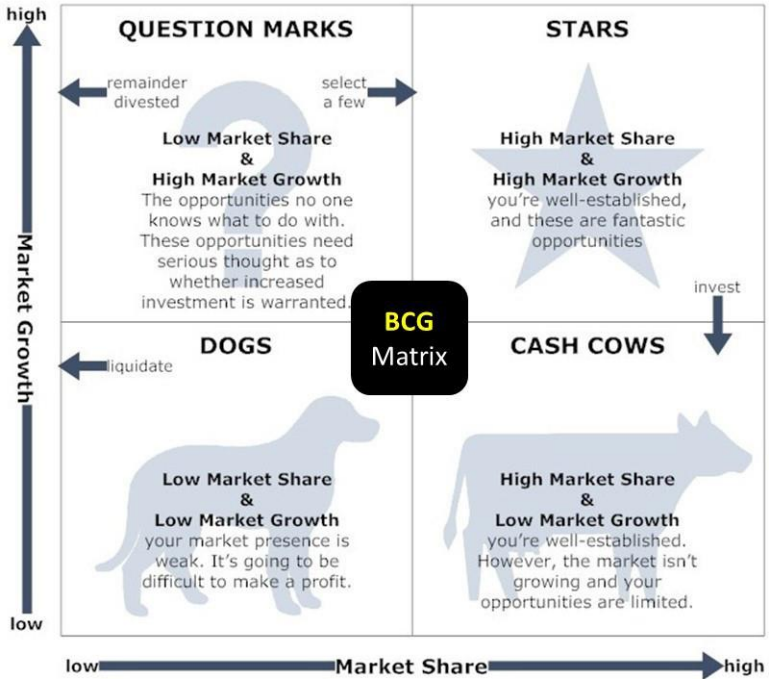


Figure 3: The Boston Consulting Group (BCG) matrix

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.

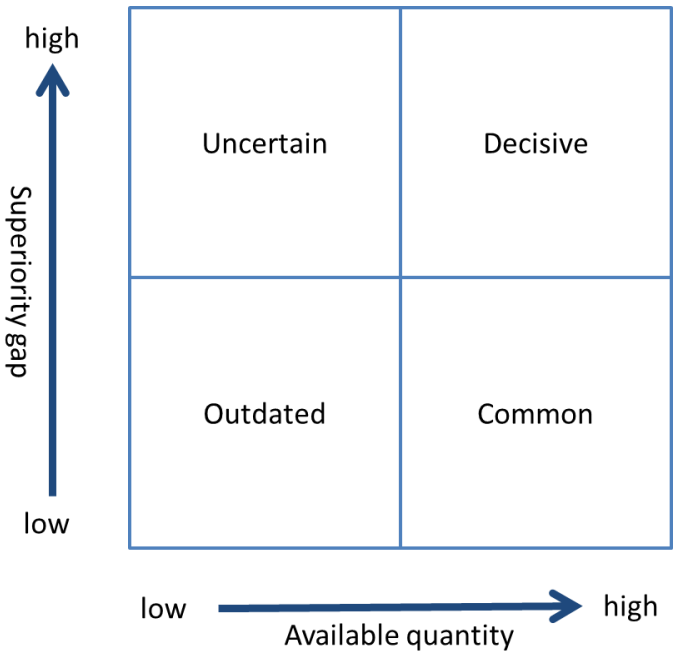


Figure 4: The Military Capability Matrix

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.

A Letter to SACT

Patrick Van Hoeserlande

Sir,

Welcome to your new command and this out-of-the-ordinary headquarter. I hope you'll enjoy the difficult task ahead of you.

This isn't the first time that I write about transformation and the central role this HQ should/could play in it. I know the word 'transformation' may be considered a legacy term by some, making room for 'innovation'; I still like the sound of the old word. This could prove that I'm old-fashioned in my thinking and that my ideas are too much in the box, albeit a big box. Anyhow, since my first appearance at the front door of the HQ SACT building, I've published articles on ACT's blog. Not high-level articles, no, just short texts with the aim to stimulate the reader's thinking process.

On the morning of your first and my second tour, I thought it a good idea to run through some of those articles and try to summarize them as a quick intro for you as our new commander. If you haven't already done it, you will surely find yourself one day sitting at your desk wondering what to do with this out-of-the-ordinary organization. Right? Well, I would like to offer you my thoughts as I did for the COS in 2013 after he asked me "what should transformation feel like?" That article was the first in the series under the name Thinkbox.

How to explain the feeling of 'transformation'? A fair, but tough, question. It is much like trying to explain (good) leadership. Visit a library and you'll find an aisle filled with books on the topic. However, after reading a few of those works, you will realize that there are different angles to look at it. You may even have an idea of the important elements, or you may have acquired a mental concept of it, but you're still not able to really explain leadership. The same is true of 'transformational feeling'. Well, transformation, leadership and beauty are alike: you'll recognize it when you see it.

That doesn't answer the question about what it is, but at least you are aware that it has more than one face. There is no 'the one' out there. Personally, I'm convinced that transformation is not characterized by an end state, but rather by the voyage to the destination you will never reach. It is more about the culture of the organization than about the organization itself.

In short, transformation is change on a continuous basis without a well-defined purpose, a never-ending spiral towards a moving target. It continuously pulls people out of their comfort zone of well-known routine. As change creates temporary stress, continuous change creates continuous stress. Do you as the leader have the right to put your staff, us, into this situation? Yes, of course.

However, stirring up people's routine without yourself knowing where to go is not easy. Add to that the fact that most of your colleague-leaders are in this HQ for only three years and that most of them come here without deep knowledge of, or even the slightest experience with, transformation. Leading transformation is as new for them as for you and as a matter of fact for most of us working here. Think about it: Where did you learn about transformation? Where could they have learned it besides here in Norfolk? So, they have to lead transformation without intimate knowledge and lacking the wished-for experience. They have to learn it too, and they too have only the short three-year tour of learning while doing.

But you don't have to walk that difficult path. There are other options:

1 – Business as usual. Act as if this HQ is just another HQ and do things as they have always been done: the low effort, low risk approach. The fact that there are almost no SMEs in transformation available provides the perfect excuse;

2 – The late move. Use your time in the HQ to learn about transformation and try to implement the elements you've learned. This will help the HQ to move a bit further along the transformational road, but while the leaders are learning, staff will stay in the 'business as usual' mode. After three years of learning and experimenting, the next SACT will come in and wonder too what transformation is all about;

3 – Learn on the go. You accept that you don't know a thing about transformation and decide to learn while doing. This means that you start walking the path while you lead the HQ. We learn all together, and make mistakes.

It is clear that option 3 is the only one likely to result in real transformation. You should put us through a rapid succession of changes because that is the only way to succeed, and we should expect it. People coming to this HQ should clearly understand that they will work in a HQ that is out of the ordinary. If the name HQ Supreme Allied Command Transformation does not give enough information on what to expect, the orientation session in the first weeks should finish the job.

Surely, this option demands moral courage from our leaders. Transformational leadership, whereby the leaders guide people on an uncertain, ever-changing path through uncharted terrain, requires that these leaders decide every day to challenge old habits, to question all they have learned, to put themselves and their people in uncomfortable and unfamiliar situations, and to risk smothering their careers. It is so much easier and safer to just do nothing. Physical courage exposed during brief periods in a military career is nothing compared to the heaviness of moral courage.

Besides taking the lead by example, you should kill habits that continuously drive us towards reactiveness, so that your staff can spend time to work on the less urgent but more important issues. There are many ways to do this. The suggestions below are by no means

revolutionary; that aspect resides in their application. Keep in mind that reactive management is necessary at times. However, it is destructive when it becomes the norm in a team or organization. To move towards a more proactive way of working, we have to:

- Take back control of time;
- Look at processes;
- Understand and manage risk;
- Focus on morale;
- Build in continuous improvement;
- Have a vision;
- Integrate the steps towards the vision, even when firefighting;
- Use the “fires” to heighten the need for change.

Although very useful in an emergency to allocate resources required to deal with an unforeseen problem, firefighting requires more effort and is less efficient. However, this modus operandi is in our military DNA. We love to solve a crisis. Just as in the real world, there's the assumption that ‘fires’ and crises are unpredictable and that they must be dealt with immediately. However, a too-frequent need for emergency actions may reflect poor planning, or a lack or organization, or a lack of understanding the problem, or being the result of self-imposed deadlines, and is likely to tie up resources that are much needed elsewhere. In order to transform, to keep the warrior mode minimal, and to have an active approach to change, altering our culture is paramount.

Next to disturbing our quiet life in the HQ, you have to be disruptive, like technology. Disruptive ideas are like wild fires. They erase old habits and provide space for new ideas to flourish. It is necessary to light the whole thing up, to shock the HQ, to gain access to people’s brainpower. It may be enough to start a small fire locally to ignite the whole HQ.

In case you consider option one or two, please remember that we have to walk the difficult path of transformation to provide our soldiers with the best options in current and, most importantly, in future operations. If we don’t do it, who will? We cannot accept anything less because we dislike to be disturbed in our daily, easy-going routine, or to work outside our comfort zone. What kind of HQ hardship justifies the denial of the best for our men and women in the field? You have to lead us, so that we can take care of the future warfighter.

By now, you will have found out that my intention with this letter was not only to write to SACT, but to all who are truly interested in transformation. Are we many on this tour?

The Bridge

Patrick Van Hoeserlande

Being on my second tour people ask me what has changed in the HQ. In the beginning, I answered in a non-committal way. After two years and now filling in a different post, there are certainly changes in my day-to-day routine. Also, a simple calculation gives that a bit less than two thirds of the staff has left the building and been replaced by newcomers which had an influence on the dynamics of interpersonal interactions. The refurbished entrance hall is again open to impress visitors. Some procedures have changed, but not that much. So, at first I gave those general observations as the answer to the 'what-has-changed' question, but I started wondering what was really different. What did attract my attention?

I didn't alter my old route for coming in the HQ for another work day. Old habits die hard when there is no apparent reason to change them. Entering the building through the door near Legal, I pass 'The Bridge' on the second deck. This meeting space looks a little out of the ordinary and even its name is not like the others referring to NATO capitals. Yes, this is the real change, isn't it?

When I first saw the name, I directly thought it came from the nautical, historical connection of the "the forward part of a ship's superstructure from which the ship is navigated". The steering wheel in the middle certainly influenced this.

But as soon as I turn around, I see "Improving Today, Shaping Tomorrow, Bridging the Two" and think there may be another meaning. This room should be the connection between the present and the future. Of what? Just hold that thought for a moment.

In preparation of this article, I've looked up the meaning of 'bridge'. There are more than the two mentioned above. Just to name a few:

- "the upper bony part of the nose ; the part of a pair of glasses that rests upon it". "The Bridge" to support a better look into the future?
- "a piece raising the strings of a musical instrument". A place to enhance our effectiveness, efficiency?
- "a connection (such as an atom or group of atoms) that joins two different parts of a molecule (such as opposite sides of a ring)". A connection between individuals, branches?

The name "bridge" opens up a spectrum of possible explanations and it is yours to pick one. It's a promising idea, but does it really function as such. Let's have a look.

It looks different. With its fatboy-like seats, special blackboards, a small library of specialized books, there is no doubt that this space is not an ordinary meeting room. The open space places every meeting in a fishbowl-like environment that could be sensed a bit stressful: "The others are watching us, so we have to give the impression that we are working hard". Situated near the COS office and above the entrance one can easily feel the symbolic value of "The Bridge". That is what I observe very early in the morning.

During daytime, it's another story. I try to pass by to observe the biotope of this special meeting room. What I see is not what I expected to see. My sampling rate may be too low to have an unbiased opinion and I'm more than willing to adapt my view, but I can only conclude that most of the time the space is unoccupied. Nobody there. Sometimes I see people talking, chatting. Yes, we need spaces where people can chit-chat or where they have a quick meeting, but is that the purpose of "The Bridge"? I even saw somebody sleeping (a copy of the famous Google "napsules"?), or was the person meditating?

How do I see the real value of "The Bridge"? It should be the playground; a sandbox to test new, innovative ways to work together. A bridge between how we work today and in the future. I propose a few simple rules for all who use "The Bridge":

- For everybody. Whatever happens on "The Bridge", you're welcome. See something interesting? Just enter.
- Personal opinions. Leave your position, rank, and even your name at the entrance. You take only your personal opinion and expertise with you to "The Bridge". Everybody's opinion is important on "The Bridge".
- Be active. Being on "The Bridge" means you actively participate in whatever 'meeting' is going on. The open door policy does not mean that access is free. When you enter "The Bridge", you must participate as long as you're there. Don't worry, you may leave the place whenever you want. No obligation to stay.
- Inform and be informed. The person starting the meeting has to provide all attendees the necessary information to be able to participate. This can be by writing the topic on the blackboard, place an Info panel for all to read … Of course, entering "The Bridge" means you know what is expected from you.
- Free to use. All ideas generated on "The Bridge" are free to use. There is no such thing as "my idea" in this zone.

Honestly, the thought to experiment with these rules crossed my mind. One day, I will go to the empty bridge, place a panel with some unusual problem statement written on it and start a brainstorming-like method by my own. I'm curious to see if somebody will join me? Or will I be left alone? What do you think? Will you participate?

The Icarus Effect

Patrick Van Hoeserlande

When I think about our transformational HQ and especially about its products, I see reports like the Strategic Foresight Analysis, the Future Framework for Allied Operations, concepts that give us a glimpse of a possible future, thought-provoking papers… Some find it hard to sail on this warm breeze of change blowing through the HQ. Leaving the comfort of one's mental box to stretch the brainmuscles by making sense of the blurred view on the future is a difficult path some prefer not to take. Certainly, when that path can lead to making mistakes and misinterpretations. Whatever the sacrifice, an organization aspiring to excel must undertake this voyage.

Recently, there is a colder wind picking up. This wind does not allow reflection. It bites you in the face and demands immediate action. As soldiers, we like this kind of wind because it calls to our nature of problem solvers. It urges for action, and that is what we prefer. No wonder that our chain of command is taking the lead in the quest for tangible outputs. They too are military brought up in a world of quick solutions. Now the Sirens sing of innovation, but this music is probably just another way to wreck our ship against the rocks of shortsightedness.

I agree that NATO's sole transformational HQ should come up with short-term solutions for big problems. We may not continuously be with our head into the future; otherwise, we risk losing the others with their boots in the mud and to severe all connection with reality. However, it may not become our focus.

The current situation makes me think of the Greek story of Icarus. Minos, the king of Crete, threw him and his father Daedalus, an artisan, into prison for disobeying. Daedalus had a plan, however, and started building wings for himself and Icarus to help them escape. He told his son not to fly too high so that the sun would not melt the wax holding his wings together. Icarus did not listen and soared towards the sun. Sure enough, his wings melted, and he plunged to his death.

That is how most of us with a little bit of interest in ancient Greek history remembers the story. In fact this is the short version and wrapped in it comes the lesson "Don't fly too high!" An important lesson of humility warning us to limit your ambition of risk making a mistake. The effect of Icarus is that we are afraid to aim high as not to burn and drown. Our culture is fixated on this part of the myth, leaving us to belief that it was the whole thing.

The old Greeks were much smarter than to warn us only for the risk of flying too high. They knew life was not that simple. You cannot achieve much by staying low to the ground. Otherwise, they would have remained a people of farmers without the rich culture they had known. The whole story completes the lesson.

Daedalus also warned his son not to fly too low, as the spray from the sea would saturate his wings and drag him down to drown. He would not go far either if kept it safe by hugging the waves. Aiming for the stars can be risky, but so is being overly cautious. One has to fly in Daedalus' zone: neither too low, nor too high.

It is worth remembering this second piece of advice too and keep the complete lesson at heart. If we want to thrive, we need also to get out of our comfort zone; we must not fly too low.

What Roles Will Humans Have in Future Combat Situations?

Patrick Van Hoeserlande

The collection of scientific explorations “VISIONS OF WARFARE: 2036” developed as a proof of concept that futurist prototyping would be a useful tool to advance our thinking around the future inspired me for the title of this Thinkbox. I guess that work does not ring a bell, not unlike other of the better transformational products that have passed into oblivion.

Sometimes luck needs a little push. Somebody mentioned that work to me during small talk about transformational concepts. I was pondering on the use of unmanned vehicles within a maritime concept and he advised me to read that work. One of the questions in that document should lead to a discussion about the role of humans in future combat situations. I do not know if those discussions ever had place in our HQ. We should accept the challenge to try to find collective answers that and other hard questions. With this Thinkbox I attempt to tackle one of the many raised in the document.

Every concept developed nowadays should consider the use of unmanned vehicles to have any value. These types of machines are in a steep evolution and on the verge to influence all military activities. The question is not if they will enter the art of war, but what their role should be.

<u>When are unmanned (autonomous) system preferred?</u>

Unmanned systems are not new thing. Depending on the definition, they are amongst us for decades, centuries, if not millennia. By some definitions, a simple trap is an unmanned, rule-based system. Even weaponized unmanned systems are not that new. Naval mines are just one example.

So what changed the nature of the discussion? Artificial Intelligence? Academics and engineers studied the topic decennia ago and wrote about most of its secrets. Putting Artificial Intelligence (AI) into practical use was another matter, because something was missing.

The miniaturization of computing power was the spark that ignited autonomous systems to life. Unmanned systems could leave the path of rule-based logic, even if that logic was a bit fuzzy. An AI system is able to learn by experience; lessons humans are no longer obliged to translate into hard line of software. This deep learning capability comes with a catch, as the certainty on how such system will react in a new situation becomes a wild guess, even in hindsight. However, is that not the case with every learning being be it human or machine?

This article is not about the legal or ethical questions that the military use of such systems could give rise to, but about when and where we could/should use these systems. Remember that there are different levels of autonomy.

Unmanned system in general and autonomous in particular perform best in dull, dirty, dangerous and dear activities:

1. Dull - The first and most obvious category that unmanned systems are best qualified for are "dull," low interaction, high repetition jobs. These responsibilities require very little human thought, and typically involve processes that have a sole objective of bulk efficiency or output. Unmanned systems have the unique ability to work around the clock and streamline "dull" processes, saving money and freeing human capital to pursue more variable, cognitive tasks.
2. Dirty - Another category of job tasks that unmanned systems are exceptionally positioned for are the "dirty," often unsanitary or hazardous jobs that can otherwise have an adverse effect on human health. These are unfavorable roles, but 'somebody – or should we say something - has to do it.' Unmanned systems remove humans from risk and harm in these situations.
3. Dangerous - In addition to preventing the loss of human lives, unmanned systems have the capacity to measure and detect variables beyond the human perception. In the event of a deteriorating situation, unmanned systems will not become under stress and keep the performance at the same level. The sacrifice of an unmanned system advantageous towards accomplishing the mission becomes a non-ethical decision.
4. Difficult - As intelligence, dexterity and the degree of autonomy for unmanned systems develop, these systems are ushering in calculated tasks that require a low margin of error and a high level of detail, precision.

Considering the above-mentioned 4Ds, military activities offer many possibilities to employ unmanned systems. Employing unmanned systems will progress efficiency and effectiveness over time and we should pursue this approach as far as technologically possible. This entails the necessity of continuously developing a range of more efficient, effective and safer systems, launched at long range and readily available in high enough numbers. This is the best warranty for success.

As these systems and their use are quite new, we lack the experience to grips the impact they will have on the battlefield. Science fiction writers and futurists can give us an idea on the possible changes but only hands-on experience will lead us into that uncertain future. It is of paramount importance that we test and field new systems, even when they are not full developed. Operators should get used to their possibilities and are key to developing future concepts.

When are humans preferred?

The 4Ds gives us an idea where the use of unmanned systems will be most beneficial, but I think we are answering the wrong question. We should not ask ourselves when to use unmanned systems, but when we should put human soldiers into the danger zone. When can machines not replace humans?

Nowadays, unmanned systems are not mature enough that they are be able to do it all. I am convinced that for a while humans and unmanned systems will work side by side, each doing what each is best. The work of unmanned systems will start with the dirty, dull, dangerous and difficult. Humans instinctively are not well suited for these jobs, but are still more flexible and dexterous, can think beyond algorithms to come up with unique ways of solving problems, are empathetic, have

emotional intelligence and more. Humans still have to program, repair and teach unmanned systems, for the most part. In separate, unmanned systems and humans cannot reach beyond their inherent limitations. However, together, in concert, unmanned systems and humans will improve capabilities beyond the simple sum of the components.

That is until general AI becomes reality. Imagine technology evolves to a point where (almost) everything is possible; when would we use humans in the fight?

When a human interfacing with machines could bring an advantage to the battlefield, the distance between that battle and the human will depend on the physical and virtual security of the communication link. Capabilities to severe this link will determine if future battlefields will be a machine-only area or still, although very rare, a place of human encounters. Anyhow, there will be a future adversary that will bring the fight to where the human element of the command and control is situated, be it a centralized HQ or a loose connection of delocalized staff officers. If we think that humans will be needed in the heat of battle as a failsafe against communication ruptures because they have an advantage over machines, than we should be able to pinpoint that need.

The first that comes to my mind is creativity. Unmanned systems cannot (yet) think beyond algorithms to solve creatively problems. Even if that algorithm is a deep learning neural network. We consider the ability to transfer knowledge in an abstract way to another domain and to use it to solve problems as something unique to humankind.

Is that really so? Are machines not thinking in an abstract way? Do they think in any other way? Although we appreciate the creativity as the basis of a perfect and innovative solution to a problem, we forget that such a solution is in most cases the result of trial and error. Is trial and error not the basis of machine learning? At a much higher speed? Even in the field of art, genius-painters make tens or even hundreds of sketched before they produce a masterpiece of creativity. As a human I have a hard time to believe that machines will one day be creative, but as an engineer I have no doubt that that day will arrive sooner than later.

Another human trait is intuition; gut feeling. Something that cannot be programmed into the electronic brain of a machine. Well, studies have shown that the intuition of experts is the quick assessment of a situation based on detecting similarities in other experienced settings. It is a collection of learned pattern recognition similar to deep learning techniques enhanced with the ability to fill out the blanks. Nothing superhuman about it and nothing a machine cannot do.

What about the advantage humans have over machines: unpredictability. Doctrine, tactics and procedures are no guarantee to predict the reaction of a soldier to a certain situation. Humans have to tendency to appreciate similar facts in different ways. Machine do not possess that quality and it is imaginable that an adversary will exploit this predictability. To counter that, we could build a certain degree of randomness into the AI to circumvent this flaw. Are we ready for that?

The human machine is a formidable one. We are able to do things that machines are not able to perform. A machine confronted with a job out of its design specification needs a human support to solve it. It is not a coincidence that robot designers study human anatomy, but they also study the animal world. With increasing diversity and enhanced dexterity, robots will soon close the not-designed-for gap. The time will come that no job will be impossible to handle, by machines.

War is a human encounter. Unless, the objective is total annihilation of the other population, a goal that will – unfortunately – be more precisely achievable with autonomous weapons, the key for success will stay the fight for the hearts and minds. The best and quickest way to win humans over is by interaction with other humans. When the fighting happens in populated areas, human soldiers will have to interact with the people living there. Of course, the soldier knocking on the door must still look like a human and not like a knight in a modern, hi-tech armor. Although humans are capable of connecting with robots, this kind of bonding demands more time than building a relationship with other humans. Machine reading of human interactions and emotions is still hard, but that will change too.

We may still assume that a machine will not come up with the idea to wage war. That decision will stay in the realm of humans. However, it is an assumption that does not limit the number of people to be involved in that decision, that is the lower limit. One person owning a factory of unmanned soldier-robots could decide to go to war against a population not caring about winning the hearts and minds.

Reading the result of the above-mentioned search of elements, there is not that much that justify humans on the battlefield. At a tactical level, it seems that the possibility for contact with non-combatants is in the long term the only good reason and that is assuming that people will not get accustomed to interacting with machines. If the latter becomes a socially accepted practice, even that element disappears and the way to robot wars lays wide open.

At another level

In a 2015 open letter on autonomous weapons, artificial intelligence and robotics researchers including Elon Musk and Stephen Hawking warned that, with these technologies, “the stakes are high: autonomous weapons have been described as the third revolution in warfare, after gunpowder and nuclear arms.” These systems will have a tremendous impact on warfare. The question is: will we use them as gunpowder or as nuclear weapons?

Will we evolve towards conflicts wherein robots are fighting until one side loses his mechanical army and surrenders guaranteeing its warm-blooded troops? Moreover, if we evolve towards that kind of robot wars, how long will it last until a third party decides not to abide by those gentlemen-like rules?

There is one shortcut in this reasoning: to have a robot-only battle, the other side must engage with robots too. What will happen if they send out an army that includes humans? Even if that practice at tactical level does not make sense. This would lead to epic battles like in the films “Star Wars” or the “Terminator”. The sympathy will not go to the army of machines, but to the human underdog. Beating human soldiers by engaging unmanned systems can turn a won battle into a lost war. A tactical victory into a losing strategy. Could we turn that asymmetric feature by using other means? Should the right to wage war be earned by putting human soldiers at a minimum risk?

However, these are ethical questions.

Towards a Taxonomy of 'Capturing Countermeasures'

Patrick Van Hoeserlande

There is no doubt in my mind that autonomous systems are a thing of the future. These systems are being introduced in today's battlefield and their introduction will only increase with time. The question is not if they going to change our way of fighting but how they will do that. We should look ahead and answer the question on how to organize ourselves to exploit fully the opportunities offered by the employment of these systems. However interesting and necessary, this article is not about finding that answer. This Thinkbox concerns a more basic problem than the conceptual reflection on war robots.

Sending out Unmanned Autonomous Systems (UASs) means risking losing them. They can be shot down - in a manner of speaking because not all UAS are flying as some are riding, sailing or diving, but you get the point – or captured. That last things happened in December 2017 when the Chinese took an US Unmanned Underwater Vehicle out of the water just before the USNS Bowditch was about to retrieve it. True, the Chinese returned the precious drone to its owner; nevertheless, the incident raised the question about the protection of UAS. At the eve of the introduction of Unmanned Air Vehicles (UAVs), users feared the scenario of drone returning home rigged with a bomb. A very simple tactic, although much harder to implement, to wipe out the people and infrastructure 'controlling' the drone.

Of course, like all things UAS are also susceptible to unintentional destruction. A passing plane can hit an UAV or a big cargo ship might overrun a small surface vessel. The result will be the same as the intentional act: the loss of the UAS. Not only an adversary has an interest in capturing your technology; somebody may think to receive a finder's fee when returning your 'lost' UAS.

There is clearly a need to safeguard our unmanned systems out there. Before we can tackle the how-question, we should consider the what-element. What do we want to protect? The first reaction is: the vehicle. Is that really the case? Protection in whatever form means extra weight, extra energy consumption and even extra risks. To optimize the whole system, we must make sure that we know what we want to protect. A cheap system may be expandable, but we may want to keep the technology, or only part of it, a secret. Maybe there is nothing new about the hardware, but the collected data may be worth protecting. In addition, I can imagine situations wherein the knowledge of the origin of the equipment or space the system is operating in is the most important to protect.

The decision of what to protect is not a static element. It may evolve over time making the countermeasures more difficult to implement.

The proposed taxonomy below is a first attempt to categorize the different methods to safeguard our autonomous secrets. I invite all to help to improve and complete it. It may well be that some application covers more than one method. With the taxonomy, I want to offer a framework to think about

countering the risk of captured unmanned vehicles. Choosing one or more measures is about striking a balance between protection and mission effectiveness.

Avoidance

The best way to defy capture (or destruction) is avoiding a possible incident, passively or actively.

Passive

Extreme: An UAS can be relatively safe if it operates at the extremes. This will be a burden on the vehicle, but it may be a too much a burden on the system attacking it making the costs too great for the potential benefits. The other side knows very well that they are there but is quasi incapable of destroying or capturing them. Example: Satellites and very deep-water vehicles are an example of such systems being relatively safe.

Camouflage: An old trick that still works. Color schemes, restriction of movement or radiation … make it harder to detect a vehicle, now and in the future.

Stealth: Although a subset of camouflage, the absence of any kind of reflection (radio waves, sound. light) deserves a category on its own because these techniques are harder to implement and may have a serious design impact.

Mimicry: This kind of passive approach has a big impact on the design of the vehicle. The idea is to assimilate an aspect of the environment. Example: A micro-UAV with an exterior design to look like an insect, the shell of an intelligent mine 3D printed to be similar as a rock …

Active

Detection: An UAS may be equipped with a subsystem detecting possible danger and alter the risky action. This ability to detect danger is a condition for all active measures because these are a reaction to an event is the environment. Example: An Underwater Vehicle may stop its ascent to the surface if it detects the sound of a surface vessel nearby. An UAV may adapt it flight pattern if it detects another airplane.

Escape: The next possibility is not limited to avoiding the risk of being captured but running away from the danger. The UAS must of course be equipped with a sensor that triggers the escape subroutine. The action following the detection of a risk is not limited to stopping the procedure, but to actively engage in activities in order to make capturing difficult.

Hiding: A UAS may opt to hide where it is harder to get.

Flight: One way to escape is to run away at high speed, preferable to safety. This approach may be short-lived as speed will possible drain the vehicle's internal energy resources.

Transfer to another medium: An interesting type of escaping is to transfer from one medium to another. There are only a limited number of systems that can go from water to land, from land to air, etc.

Screen: Like the maneuver of an octopus, a change in direction combined with a screen that reduces the effectiveness of the adversary's sensor may increase the likelihood of escape.

Emulation: A bit similar like mimicry, but in an active way. Example: A small UUV may emit a sonar reflection like a submarine.

Decoy: An UAS may launch a decoy to trick its hunter following the decoy instead of the actual vehicle. Although effective, it is limited in its application.

Confrontation

If avoiding capture is not possible or not preferred, the unmanned vehicle can be equipped to tackle the danger head-on.

Self-destruction: If all above do not help or are too cumbersome to implement, a limited or a full-blown self-destruct mechanism may do the trick. The self-destruction must be designed in such a way that it destroys the parts we want to keep a secret. If the vehicle itself or most of the equipment needs protection a complete destruction may be consider. In some cases, this will be a hard thing to accomplish. Parts of a destroyed vehicle may be enough for a reconstruction. Self-destruction does not necessarily mean that it must be an explosion, a strong acid may be better to erase a memory card. Having a self-destruction mechanism aboard may prove a supplementary weakness. It may be hard to define when an UAS is compromised. What are the criteria to initiate the self-destruction? A cyber-attack may initiate the self-destruction mode when the adversary only wants the vehicle out of operation.

Deterrence: The ability to self-destruct may be used as a deterrence. In that case, this ability must be clearly marked to have an effect. Example: The skin of the vehicle may carry a warning that the vehicle will explode if tempered with.

Self-defense: Although a possible legal nightmare, an UAS may be equipped with a self-defense capability. Instead of flight, this system may opt for a fight. This capability must not necessarily be aimed at human soldiers, it may well be exclusively against other UAS.

Against LARS detection

A last category that stands apart from the rest is the protection against Launch and Recovery Systems (LARS) detection. UAS and its operators are extra vulnerable during launching or recovering a UAS. This weakness may offer the opportunity to attack the UAS and its operators at the same time.

Wait: There is no rule that a UAS must be launched just before its employment or recovered directly after it has finished its mission. There may be a period of inactivity between those steps. This forces the other side to spend time and resources in waiting for things to happen.

Change or variation: As there is no rule about the time between activity and L&R, there is no need to have a direct approach from the zone of activity to the L&R activity. The more variation, the harder it will be to follow the UAS and detect the L&R moment.

Speed: The quicker the L&R happens the harder it will be to hit during that vulnerable moment.

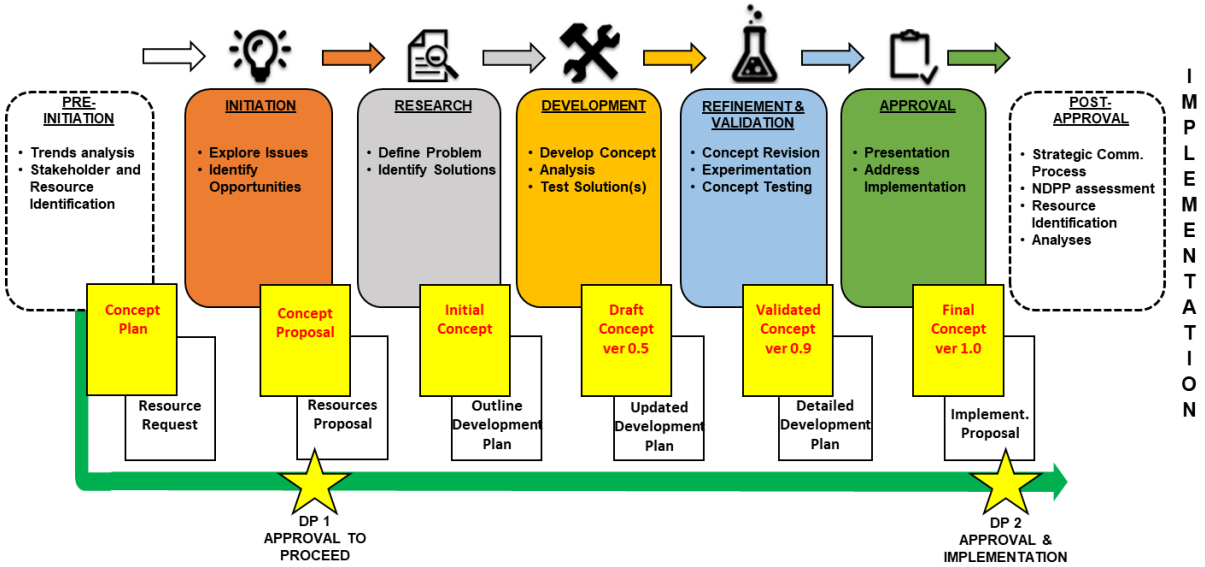
This taxonomy is certainly not complete, but I think it may help further development and discussion about protecting our systems. The sooner this aspect receives thought, the better the design of the necessary measures will be.

Gamification of Project Management

Patrick Van Hoeserlande

It is not good practice to ask forgiveness of one's readers at the beginning of an article. Nevertheless, I will do it anyhow. In this article, I use concept development as an example on how we in this HQ could work with projects in an innovative way. Although convinced that what I propose is valid for all kinds of projects, I use concept development as the example because I know that methodology very well. Using other types of projects would lead me towards writing more about possible project structures than about the idea to improve their initial management. The approach that I propose is in itself not new or revolutionary, but its application in a military HQ is certainly innovative.

You, the reader probably not working in the concept development branch, may not know the most recent methodology. I guess a quick introduction will improve your understanding of this article. As shown in the figure below, the methodology consist of 5 + 2 phases. The first two (pre-initiation, and initiation) are important together with their distinct product as output to specific decision point. Combined they form the initiation of a project with a focus on the problem definition after which the long and resource intensive part of the work starts. These phases are most critical in the life cycle of a project because in that period only the 'fittest projects (should) survive'.



According to Darwin, a life form equipped to thrive in a certain environment needs for a broad pool of possible candidates to be selected from. Unfortunately, in most project environments there is a lack of such a diversified pool. The generation of ideas runs very low and the ideas that are selected out of sparsity are pushed to towards ‘success’ even if that means getting them through on life support. Luckily, for us, humans, that is not how nature works, but we, as members of an organization, hope that this faulty method will lead to great applications. Does that not sound strange?

If we want to collect a good and big enough pool to fish in, we urgently need another, better approach. There are different methods to generate ideas and most of them have their value, but for an idea to survive the first days, it needs a caretaker: an owner who is ready to fight for its survival. However, caretakers need motivation, incentives. It is not easy to come forward and defend an idea, so a stimulus is needed. Not convinced? When was the last time you proposed a new idea? Right.

Another flaw in our system is the lack of initial resourcing. I do not necessarily mean money, but resources like a project lead – may be different from the caretaker -, a high-level sponsor and some SMEs who can help maturing the idea. Looking for these kind of resources for a fledgling idea is hard because, well, it is not fully developed yet. However, lacking those resources means that even bright ideas will not reach their potential. They will die before they even had a chance. We may like Darwin, but no species survive a hostile environment.

The last critical part before an idea leaves its nest is its selection as an official project. This go/go-no moment is in our current system a decision of a high-level board. Nothing wrong with that as our generals are authorized to use resources in the execution of our mission. Unfortunately, they have to decide on arguments forwarded by a limited number of people. Lacking the initial resources, only ideas that are semi-officially supported in the beginning make a chance to reach the board. Many ideas do not make it out of lack of an initial impetus. People coming up with ideas select these out because the water is just too deep to put them in the pool. Another effect is that ideas, even very bad ones, from persons with access to resources can easily make it to a positive decision. Not only are those ‘blue blooded’ ideas nurtured, they are also powerfully and with authority defended before the board. Natural selection gives in to genetic manipulation.

Is there really a system that could tackle all those issues in one stroke? I believe there is. We could harvest our collective wisdom to solve the abovementioned issues. I am not a specialist in designing games, although I have experience with successfully creating one, but I am sure some in our HQ could use my suggestions to make one.

Here it is: under the motto ‘the market knows best’, we should create a HQ-wide game based on a stock market for our projects.

Of course, we would not play with real money but print a kind of SACT-chips. The more chips one owns, the better he or she is at the game of selecting the right projects. Certain amounts of chips could give access to specific rewards, recognition by our leadership … We could have a champion of the month, of the year, of all time. It could be fun.

Additionally, by having an internal discussion forum, a blog with project information, a stock exchange … we would stimulate discussion of ideas and projects. Interdepartmental work would increase and people would start caring about current and future projects.

How could such a game work?

First, every, and I mean every, member should get a fixed number of chips to start with. This is the only time that chips are given away for free; from then on, they have to be earned.

There are different ways to earn chips. The first one is to introduce a project proposal or idea. This introduction to the stock market must be accompanied with a minimum of information about the idea (5Ws), the team necessary to develop further (lead, sponsor and number of SMEs) and the deadline to get the project approved by the board (in case of a concept that is the Campaign Steering Board). Based on this information the 10 ‘richest’ traders in the HQ independently decide on the initial stock value of the idea (these traders get chips for their effort). Only if an idea does not pass a (low) threshold, it is stopped and the owner is not paid.

Within a week, an idea should find its way to the market. From then on, people can express their desire to buy or to sell shares in the project. Once every week, the market closes and shares exchanged. We will need a software tool to make this happen. At the beginning of the following week, everybody knows the value of his or her portfolio as well as the value of the shares of every project.

On a daily basis, people can earn money by filling posts in the project teams. A project with a lead, a sponsor and the requested SMEs will normally have a greater market value than one missing those resources. The owner of the project is the one deciding on ‘hiring’ team members. Moreover, of course, all is completely transparent to everybody in the HQ.

The big chips can be earned on two occasions, the two decision moments. The first is when the Concept Request is approved by the branch head Concept Development (or a similar position for other projects). When this document is approved, the project gets a

limited budget to push it towards Decision Point 1 and the team members and shareholders get a dividend in relation to the market value of the project. Passing this test will greatly improve the value of the project at the next stock exchange calculation. Failing will probably influence negatively its value. Of course, everybody, thus also those who are not a team member, is invited to help turning a project into a success.

When a project is approved (this may include the decision that it is a valuable project but of a low priority) by the CSB at DP1, it enters the formal staffing process. The shares of the project will be taken from the stock market, the members paid and the shareholders get their share paid in full, plus dividend. Of course all that with a bonus for those that have invested in the project.

There are a few challenges in designing this game. What will the stock exchange software look like? What will be the number of chips earned when introducing an idea? Being a member of a project team? The bonus/dividend for passing a decision moment? These rules of the game may change over time, but not too much as not to change the nature of game.

Unfortunately, I lack the expertise and the experience to design and implement this game. I hope that somebody steps forward to turn this idea into reality. Maybe he or she will earn the first chips that way.

A Practical Guide for Developing and Writing NATO Concepts

Part I: About Concepts

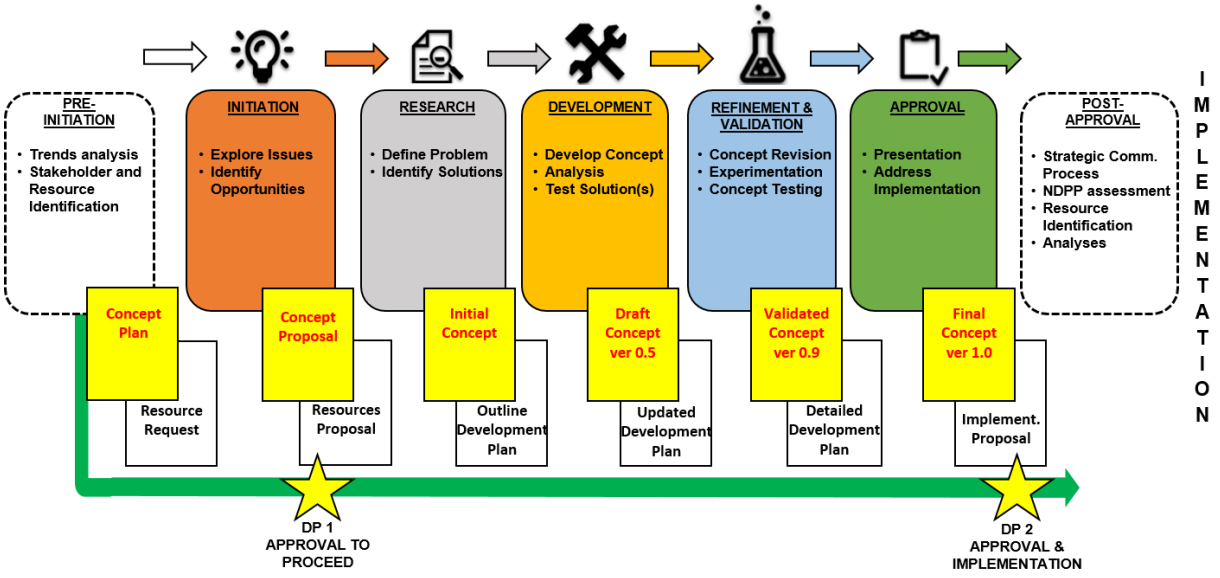
Patrick Van Hoeserlande

Introduction

The purpose of this series of 3 articles is to provide practical guidelines for developing and writing NATO, in cause military, concepts and for evaluating the validity and quality of those concepts, with the ultimate goal of encouraging the development of more, thoughtful and useful concepts. Although focussed on NATO concepts, most of the guidelines can be used for (multi)national concept development too.

The HQ SACT's CD&E handbook prescribes the methodology, as illustrated below, as the basis for the development of a NATO concept. The intent of these articles is to supplement it by offering practical advice to concept developers in the exercise of judgment and creativity, both of which are essential to the development of good concepts. By collecting the guidelines in a series of articles, the non-prescriptive nature of these should be clear.

These guidelines are based on the 2002 publication "A Practical Guide for Developing and Writing Military Concepts" by John F. Schmitt supplemented with some personal experience.



Concepts and concepts

The use of the word concept has proliferated to the point that an important and useful tool has been rendered practically meaningless. The term concept has come to be

applied loosely to any description of military (or even non-military) activity or capability. Descriptions of purely technical or procedural activities are promoted as concepts. Outputs and results of an intermediate step of the CD&E methodology are shamelessly called ‘concepts’ leading to unfulfilled expectations of the value of the offered product.

Adding to the confusion, concepts of operation are sometimes mistakenly – but not always intentionally - referred to as concepts. A concept is distinct from a ‘concept of operation’ or CONOPS, which is defined in AAP-06, as “A clear and concise statement of the line of action chosen by a commander in order to accomplish his given mission.”. Where a concept describes operations generally by type, a concept of operation describes a course of action chosen for execution in a determined situation. A concept of operation can be thought of as the instantiation of a concept (of operations, mind the ‘s’) under a specific, unique set of conditions.

A concept defined

According to the AAP-6 (NATO Glossary of Terms and Definitions), a concept is “*a solution-oriented transformational idea that addresses a capability shortfall or gap*”. Just having an idea is not sufficient, within NATO you have to write it down on paper. This paper has the status of a ‘Concept Proposal’ and starts the initiation phase of the above-mentioned methodology. After a successfully run through all the phases, we consider the document fully developed, researched, refined and validated, and has it earned the label ‘(approved) concept’.

Another way to looks at concepts is through the lens of ‘ends, ways and means’, of which a concept corresponds generally to the ‘ways’.

- The **end** is the stated objective, ranging from a broad strategic aim to the accomplishment of a particular task.
- The **ways** are the method or scheme (that is, the ‘concept’) by which the means are applied to accomplish the ends. The essence of a concept is this description of method.
- The **means** are the military capabilities to be employed in the given situation. They may range from the full arsenal of military forces available at the operational or strategic levels to a particular capability such as a weapon system, vehicle, training system or specific unit at a lower level. A description of a capability by itself does not constitute a concept; capabilities can be created but not used as envisioned, while identical capabilities employed differently would constitute different concepts. That is why the description of the DOTMLPFI is in most cases a necessary, integral part of a concept, but does suffice to have a concept.

Likewise, the description of a desired objective does not constitute a concept; any number of different approaches or methods, employing various capabilities, could conceivably accomplish that objective. The end is necessary to provide context, and the means are needed to describe what resources will be applied, but the essence of the concept is the way in which those capabilities are to be employed. In this sense, concepts are primarily descriptions of how things are done.

Historical, current and future concepts

Concepts may describe past, present or future military actions or capabilities.

An historical concept describes its subject as it applied in some past context. Often the concept will not have been articulated explicitly at the time, but must be deduced from the historical record. Examples are the concept of blitzkrieg, the Napoleonic system of logistics, and the techniques and procedures of ship-to-shore movement practiced in the Second World War. The first two were not explicitly codified at the time, but have been deduced since, while the third was codified before, although continuously modified during the war. Historical concepts are both a product and a tool of historical analysis.

A current concept describes its subject as it is intended to apply today, with today's organizations, methods and technologies. A current concept may be written down and/or codified in existing doctrinal, tactical, technical or procedural references, or it may be emergent (i.e., arising pragmatically and implicitly from current operating, technological and institutional conditions and identified only historically) or, more likely, it may combine both explicit and emergent elements. Current concepts should provide the basis for operations planning (i.e. for a CONOPS) and existing military doctrine, organization, materiel acquisition, training, education, tactics, techniques and procedures.

A future concept articulates how it is envisioned its subject will apply in some future context. Initially a future concept is untested and should be the subject of rigorous experimentation and debate. This forces it to evolve and eventually validates or invalidates it. In this way, a future concept evolves, following the CD&E methodology, from an untested hypothesis to a more assertive, but not necessarily fully validated, conclusion. Only after the concepts have been experimentally examined to the point that it has been validated with reasonable confidence can it provide guidance for the requirements process. Many concepts cannot be fully tested in peacetime. Since by definition future concepts cannot be deduced from past practice or observed in current practice, they must be stated explicitly in order to be understood, debated and tested and to influence the development process.[1]

Concepts and doctrine.

Doctrine is defined as "Fundamental principles by which the military forces guide their actions in support of objectives. It is authoritative but requires judgement in application" (AAP-06). The term "doctrine" is often used more widely to refer not only to fundamental principles, but also to approved, implemented (that is, "doctrinal") organizations, training methods, educational programs, etc. Concepts are the core of all doctrine (in both the specific and wider meanings), although concepts are not doctrine until tested, approved by the nations and promulgated by the NATO Standardization Organization (NSO).

Not all future concepts will become doctrine; many will not (and should not) survive scrutiny by the CD&E methodology. The invalidation of a future concept should not be considered a failure of the concept development methodology, but a success because the methodology has invalidated an unsatisfactory concept and prematurely stopped it from implementation.

[1] Unless otherwise specified, the concepts discussed hereafter are future concepts.

Current and future concepts not fixed

Current and future concepts are not fixed, but evolve over time in response to various factors. These factors include technological, political, societal, cultural and other developments that necessitate changes in the concept.

A concept will also evolve in response to other concepts, our own related concepts as well as those of the NATO nations or potential adversaries. This evolutionary dynamic is an essential element of concept development. Even after a concept is approved as doctrine, the concept will continue to evolve (although the official doctrinal statement of it may not be updated for some time). In this way, concepts continuously evolve in advance of doctrine. Successful future concepts change over time and eventually become current concepts, which in turn eventually become historical concepts, at which point they finally become fixed as historical descriptions (although an evolved version may continue to develop as a current concept).

Now that we understand what a concept is, we will see in the next article some practical guidelines for developing and assessing future concepts.

A Practical Guide for Developing and Writing NATO Concepts

Part II: Developing and Assessing Future Concepts

Patrick Van Hoeserlande

The purpose of this part is to provide practical guidelines for developing and assessing future concepts, although many apply also to historical and current concepts.

Reasons for a New Concept

There are two possible reasons to start developing a new concept:

New military problem

A concept may be developed to propose a solution to a newly identified or an anticipated (future) military problem for which there is currently no adequate military solution. Some new combination of political, social, economic, technological, doctrinal or other factors may cause this new problem. New objectives in an existing situation may also lead to a new problem. For example, a situation itself may be unchanged, but political expectations may have increased, necessitating a new concept.

New solution to an existing military problem

A concept may be developed to propose a better solution than currently exists to an existing military problem. This better solution may be made possible by some technological, organizational, tactical, societal or other developments that did not exist previously, or it may be necessitated by the failure of an existing concept.

Future technological, organizational, tactical, societal or other developments may cause changes in existing solutions and, if not followed through, create a new military problem. Developing these kind of concepts may generate extra resistance as the current solution still has its validity and the new solution may not be realisable yet. However, waiting until the new development is mature enough to implement may result in a too slow (or worse, too late) adoption of the new possibilities.

Foundations of a Good Future Concept

A concept should be based on a serious contemplation of the subject of war. All concepts are based on certain beliefs about war, and the validity of a concept depends

on the soundness of those beliefs. A future concept may or may not address these principles directly, but it should at least be compatible with them or explain why it is not.

Historical awareness

A future concept should reflect an awareness of military history, even though it may propose a revolutionary departure from historical patterns. Useful future concepts are rarely derived from abstract theoretical premises, but instead are speculations about the future informed by the practical lessons of the past. History is the primary means by which we study and understand warfare. A concept that ignores history risks sacrificing credibility. Even worse is a concept that misuses history to support preconceived theories. A concept should reflect an understanding of its own evolution and antecedents.

Concept developers should resist the temptation to believe that the past offers little insight because the factors facing the current age are so unique. They rarely are.

Likewise, concept developers should resist the temptation to develop a concept that is viewed as “revolutionary” for the sake of being revolutionary. The desire for a revolutionary breakthrough does not make it possible. Favourable conditions must also exist and it is only through an understanding of history that one can know if they do. The overwhelming preponderance of change is evolutionary, but this does not make the change any less valuable. Evolutionary future concepts will be the norm. Unfounded claims of revolutionary breakthrough will damage the credibility of a concept.

None if this is meant to discourage concept developers from being ambitiously forward thinking, especially early in the concept development process when the objective is to explore possibilities. There is a difference between appreciating history and being a slave to it. On the contrary, history can help one understand how the world has changed. A true appreciation for history may help identify the emerging technological or other advancements that make dramatic improvements possible. Finally, an appreciation of history will provide a natural scepticism of faddish ideas that have not had to stand the test of time.

Consistent with the nature and theory of war

Underlying any future concept is a system of fundamental beliefs about the nature of war and the successful conduct of military action. These beliefs may be expressed explicitly in the concept, or they may be implicit, but in any event they establish the essential foundation of a future concept.

Some attributes of war may change, but others are immutable. A future concept must capture the attributes that are subject to change without violating the attributes that are not. In other words, a future concept must reflect the true nature and theory of war.[1]

War is essentially a clash between hostile, independent wills, each trying to impose itself on the other while denying the other its aims. The antagonists are not inanimate objects, but wilful intelligences which will spare no effort to confound the others’ designs. These opposing wills are not monolithic forces, but highly adaptive complex

[1] Two classic authorities on the subject are Carl von Clausewitz' On War and Sun Tzu's The Art of War.

systems. The interaction between them unfolds in a fluid, time-driven dynamic of initiative and response and is characterized by friction, uncertainty, unpredictability, disorder, violence, surprise and random chance. Outcomes can be highly nonlinear (i.e., highly and unforeseeably disproportionate to inputs), and unintended consequences are commonplace. Under these conditions, war is a continuous and uncertain struggle to reconcile ends, ways and means. Quantifiable factors such as numerical superiority and attrition matter, but so do intangibles like surprise and boldness. War is fundamentally a creation of politics, economics and culture and will thus be impelled and restrained by these external forces. Military designs must be tied to higher objectives. A credible future concept reflects the phenomenon as it is rather than distorts the phenomenon to conform to the desires of the concept. If a concept contradicts the consistent experience of war, the burden is on the concept to make its case. In other words, if a concept professes to change the conduct of war so dramatically that the old "rules" do not apply, it is obligated to explain convincingly how.

Balance between military art and science

In order to qualify as a concept, a concept must encompass both military art and science as they apply within the parameters of the concept. From the classical period of history until the 17th century warfare was viewed mainly as an art best understood through historical study. The Scientific Revolution ushered in new and vastly different technologies and a different approach to war - that of science. For more than 300 years a tension has thus existed between military art and science.

Each has its proper and required role. A future concept should envision an appropriate balance between art and science; it may stress one or the other, but it should not ignore either.

With the growing dominance of science in nearly all aspects of human endeavour, the military profession has seen a more-or-less continuous tendency to shift this balance toward science by making an increasing part of warfare scientific. Developers of concepts should we be aware of this tendency because there are limits to the extent to which military operations can be turned into procedure. A concept that proposes a dramatic shift in the traditional balance between art and science (usually by proceduralizing an activity that has traditionally been viewed as belonging to art) should describe the factors that make the shift possible and desirable.

Embedded in the proper military-technological context

Most future concepts are designed to exploit new technologies or to respond to the proliferation of new technologies. Any such concept must understand those technologies. It must comprehend the military-technological context within which it is meant to apply. It is not the primary purpose of a concept to envision new technologies, but to envision new ways of operating with technologies that are likely to exist. A concept must not assume the existence of technologies that are unlikely within the future time horizon of the concept. A concept that does this is fantasy, and not the proper basis for the combat development process.

Conversely, a concept must not ignore the existence of technologies that will likely be in use within the time horizon of the concept. A concept that does envision a technology breakthrough must also strive to envision the resulting countermeasures, which may take the form of new operating methods or new technologies themselves,

that are likely to emerge in response to the breakthrough, since no innovation has been introduced that did not generate counter-innovations to mitigate it. In envisioning an appropriate military-technological context, concept developers should remember that war is ultimately a clash between human wills and that the human dimension is therefore dominant. A future concept should be careful not to describe war as essentially an interaction between technologies. The principle of envisioning proper context applies not only to technology, but also to political, societal, cultural, economic and other factors.

Recognition of the general approach to war

A future NATO concept should be aware of general approach to war. This approach is an informal product of civil-military consensus built up over time rather than a formal policy. It is based on shared values and national experiences in war and is reinforced by strong cultural and institutional forces created by those values and experiences. Any future concept will be part of this larger cultural context and should be compatible with it. A future concept that ignores these factors is not likely to be acceptable to the military or the society.

As examples, in present form, the general approach emphasizes unity of command, significantly through deliberate, centralized planning with a political oversight. It features a general desire to minimize casualties and collateral damage on all sides. While some of these principles are more fundamental than others, it is important to recognize that all of them are conditional. A new concept does not by definition propose essential changes to the manner of war. In fact, many new concepts are simply examples of the current approach taken to the next level by enabling technologies. The point is merely that any concept that ignores the way of war and the factors that influence it is not likely to be accepted.

The third and last article answers the question: “What topics should a good concept address?”

A Practical Guide for Developing and Writing NATO Concepts - Part III : Elements of Future Concepts

Patrick Van Hoeserlande

Elements of a concept

What topics should a good concept address? This part provides a minimum, but, depending on the nature of the concept, others may be added. This part is not about prescribing a template or outline for a concept, but describes only the elements that a concept should contain.

Purpose

Every future concept should begin with a statement of purpose that lays out the intended uses of the concept. Often a concept will have more than one purpose. The purpose or purposes of a concept at any given time will likely depend on the concept's stage of development. Early in the development of a concept, the purpose may be to generate thinking about how to cope with new operating challenges, or how to exploit potential opportunities provided by technology or other developments. Later on, the purpose may be to provide the basis for military experiments and exercises, or to explore approaches for conducting operations in certain circumstances in order to affect thinking about potential concepts of operations. At later stages, after the concept has been validated, the purpose may be to provide guidance to the capability development process or context for the development and evaluation of lower-order concepts.

Time horizon, assumptions and risks

A future concept should explicitly specify the future time period within which it is meant to apply. After a concept has started to gain validation, in order to assist the capability development process, the concept may identify milestones when elements or implications of the concept are meant to take effect.

To the extent possible, a concept should explicitly identify any critical assumptions upon which the concept is dependent. These establish the limits of the concept. The less restrictive the assumptions, the wider the applicability the concept will have.

Additionally to the extent possible, a concept should specify any identified risks so that these may be explored and addressed during continued concept development.

Description of the military problem

In most basic terms, a future concept supposes a military problem and then proposes solutions to it. A future concept must therefore include a description of the military problem the concept is meant to solve. This provides the context within which the

concept applies. Equally important, it establishes the conditions under which the concept does not apply. The problem description should include the broader context within which the problem exists. In the case of a strategic concept this would be the wider political situation. In the case of an operational concept, it would be the envisioned political-strategic situation. In the case of a tactical concept, it would be the operational situation. The problem description must include a statement of the type of mission to be accomplished. The mission type may be as broad as defeating enemy military forces in conventional combat, or it may be more narrowly defined. To the extent that geography or physical environment are factors in the concept, it should describe them. A central element of the problem description should be a description of the security environment envisioned to apply in the timeframe of the concept. This environment includes a description of the character and form of the envisioned threat, including organization, tactics, and weaponry and other key types of equipment and technology. It also includes any governmental, economic, societal or other factors that may impact on the conduct of military action. A concept may explicitly take its context from a higher-order concept, in which case it need not restate that context in full, but need only amplify where necessary.

Synopsis of the central idea

The centrepiece of any future concept is a high-level description that encapsulates the “how” of the concept in a paragraph or two. Think of this as a concept of the concept. It captures the "big idea" of the concept, ideally in terms that differentiate the concept clearly from others. This synopsis should aim to capture the essence of the concept in the most fundamental and widest terms possible that retain practical meaning.

Included in this synopsis should be a description of the ‘success mechanism’, a statement of how it envisioned this concept would accomplish the stated mission. This success mechanism should be stated in terms sufficiently broad that it could be widely applied. Basing a future concept on the eventuality of a single, narrowly conceived success mechanism neglects the friction that is a primary and timeless attribute of war.

Application and integration of military functions

A concept should include a description of how the various military functions, are applied and, importantly, how those capabilities are integrated per the concept into a cohesive operating system. Again, these functions traditionally consist of command and control, fires, manoeuvre, sustainment and security, although a concept may include others. It may be possible to conceive of a radical new construct for describing the conduct of military operations that does not include the traditional military functions - this would probably constitute a truly revolutionary concept-. If so, the burden is on the concept to make the case that this is a valid construct. In any event, this description should clarify each of the pertinent functions. This is not a generic description of those functions, but a description of how they apply specifically within the context of the concept. These provide the basis for the subsequent development of supporting functional concepts. A concept may rely on a particular approach to logistical support or a particular use of fires, which would be summarized in the concept and then fleshed out supporting functional concepts.

Included in this description of functions should be the relative importance of the various functions, and their relationships to one another. For example, the relative balance and interaction between manoeuvre and fires has often been a defining characteristic especially of tactical concepts - with wide variances through history. The functional

activities are the basic components of the concept - they are what military forces do - and these synopses constitute the primary substance of the concept. In this sense, a concept can be thought of as the unique combination of the various military functions and sub-functions applied to some military problem. In fact, one criterion for deciding if a new concept is needed is whether the combination of functional requirements is so unique in the given set of parameters that a new description of the integration of those functions is necessary. In the end, however, a concept must be more than merely a collection of functional synopses without any higher idea to provide cohesion.

Necessary capabilities

The concept should describe the capabilities that it is envisioned will be required to implement the concept successfully. This description refers to the general capabilities of the force rather than to any particular doctrinal, materiel, organizational or other capabilities as might be specified in requirements documents. The description should be made in qualitative vice quantitative terms. The concept generally should not dictate how the capability is to be created and should not specify any particular branch, service, system or organization. Examples of such capabilities descriptions might include “the ability to engage two enemy echelons simultaneously,” “the ability to neutralize enemy air defences,” “the ability to conduct forcible entry,” or “the ability to operate almost exclusively from sea bases.”

Spatial and temporal dimensions

Military actions occur in time and space, and a concept should discuss these dimensions. It is difficult to describe distances, ranges, tempo and duration with precision because these factors are situationally dependent, but a future concept should provide at least a general appreciation for the scale of these dimensions as they apply within the concept, even if that appreciation is only relative or qualitative. For examples, a concept might describe actions taking place at “tactical standoff distances" or as “maintaining a higher operating tempo than the enemy." Where appropriate, a concept should describe any envisioned sequence of actions, not necessarily as the designated phases of an operation, but as a description of the expected general flow of events over time. For example, the concept should describe any required build-up phase or envisioned preliminary actions.

The last four elements (the synopsis of the central idea, the application and integration of military functions, the qualitative description of necessary capabilities, and the spatial and temporal dimensions) together provide the essential description of how the force will operate. The synopsis of the central idea provides context for the functions, capabilities and dimensions. The descriptions of functions, capabilities and dimensions provide substance to the synopsis. The synopsis is a top-down description of the concept, while the others describe the concept from the bottom up. The four are complementary elements, and a tight and direct linkage should exist between them. In the case of the functions, capabilities and dimensions, it may not be possible or even desirable, to describe these elements separately of one another.

Attributes of a good future concept

The following attributes, rhetorical and structural qualities, tend to make for a good future concept.

Serves stated purpose

The foremost quality of a good future concept is that it serves its own stated purpose (as discussed in paragraph above). That is, it provides meaningful guidance that can support the developmental activities described by the purpose of the concept. This guidance should be sufficiently specific that it can be acted upon, but not so specific that it permits no latitude in interpretation.

Stated in language that can be acted upon

Future concepts do not exist for their own sake, but are meant to serve the combat development process. As such, they should be written in unambiguous language that can be acted upon. A future concept starts as an untested hypothesis. It should be written as a hypothesis rather than as a bald assertion, which is to say it should set up criteria for testing its feasibility through experimentation. The concept must be falsifiable; it cannot be written in such a way that is impervious to historical or experimental evidence. The ultimate objective is not the approval of the concept regardless of its merits, but rather an unbiased examination of its merits. Only after the concept (or part of it) has been validated does it begin to drive requirements. Here the concept must be acted upon in other ways. At this point, the implications as to capabilities required to implement the concept ought to be clearly deducible in the concept.

Accepts the burden of proof

A future concept should be written in language that acknowledges its burden of proof. A new concept warrants no assumption of validity, but recognizes that it will meet with scepticism and must make its case. It should reflect depth of thought and research. It should be written in language that recognizes its hypothetical nature rather than in pronouncements that suggest the concept is axiomatic or manifestly true. In other words, a good concept is written in language that is open to criticism. A concept that survives to eventual acceptance will be stronger as a result. As evidence accumulates through experimentation and analysis that the concept is valid, later iterations of the concept will naturally take on a more assertive language.

Differentiated

A good future concept is clearly differentiated from other concepts. It may do this by describing a unique operating problem that it addresses, or it may do this by describing a unique approach to a common operating problem. In either case, the synopsis of the central idea and the description of the application and integration of military functions are the primary areas in which a concept can differentiate itself. A concept can generally distinguish itself by presenting its essential characteristics clearly in stark, fundamental terms. In this sense, broad descriptions are often better than numerous details, which can tend to obscure the basic themes. A concept may also differentiate itself by explicitly comparing and contrasting itself with other historical and current concepts as well as other future concepts. In other words, it may often be more effective to describe a new concept in relation to a known reference point than to describe the new concept purely on its own terms.

Explicit relationships to other concepts

A future concept should establish it relationships with other concepts in the same general concept space. Those relationships may be:

- Subordinate: describing one part of a higher-order concept in greater detail;
- Superordinate: containing one or more lower-order concepts;
- Adjacent: generally on the same order as other concepts, with a common superordinate concept;
  Superseding: succeeding or replacing another concept;
- Competing: offering an alternative to another concept defined by the same set of parameters.

Clarity and precision of language

A future concept should be presented in clear and precise language. The concept should generally avoid the invention and use of new terms, using accepted and well-understood terms as much as possible. Terms should generally be defined on first usage and used consistently thereafter. Concepts should likewise minimize the invention and use of acronyms and catchphrases. Concepts should use simple, straightforward language, avoiding elaborate phraseology and artistic descriptions that are meant to evoke meaning rather than express it directly.

Concise

A future concept should be presented concisely and economically so its message can be absorbed and kept in mind while being acted upon. It should provide no more explanation than is necessary to serve its stated purpose. Additional explanation rarely serves to clarify, but instead tends to obscure the message and can unnecessarily restrict judgment in application. Instead, brevity rather than comprehensiveness is usually a sign of a good concept. The concept should make its points and move on; a concept that tries several different ways to communicate its message is likely still searching for its message. There are no rules as to length, but some well-founded concepts have ranged from about 10-20 single-spaced pages. A concept that is significantly longer than this likely contains too much detail or too many subordinate concepts. In such cases, it is often better to create several more concise, hierarchically related concepts.

Robust

Some future concepts may accurately predict the operating environment in which they are eventually applied, but predicting the specific future is not a necessary quality of a good concept. A good concept should apply to a variety of possible futures. That is, it should deal successfully with multiple possible scenarios within its defining parameters, as opposed to applying only to a specific combination of conditions. A concept that applies only to a specific combination of conditions, or that is easily invalidated if one or more conditions are not met, especially unlikely conditions, is fragile rather than robust. A concept with a very narrow range of applicability borders on being a concept of operations as opposed to a concept.

Promotes debate

Open and meaningful debate is an essential element of the concept development process, and a future concept should promote this. Debate is the means by which

concepts are evaluated, strengthened, validated and eventually accepted by an institution. Concepts can promote debate, first, by providing their descriptions in clear, fundamental terms that are readily understood, allowing interested parties to get to issues of substance rather than haggling over meaning. Using established, commonly understood terminology helps in this way, whereas invented terms often necessitate clarification. Concepts need not be intentionally overstated or ideological in order to promote debate, which is not the same as provoking reaction. In fact, an overstated concept can inhibit meaningful debate by encouraging overstated reactions. An even-handed concept with a strong intellectual foundation, a clearly differentiated view of future military operations, and a concise and precise description of its essential elements is likely to promote debate naturally.

Conclusion

Very few concepts are created initially in full form or fully realized in their first incarnations. Like most ideas, concepts tend to form iteratively and incrementally over time. This is no criticism of concept developers, but simply a reflection of the limits of human foresight and the acceptance of the nature of concept development. It is not an orderly, sequential process. Concepts are not engineered solutions. Developing a concept is not like building a house, in which the final result is fully blueprinted at the beginning of the process. A concept is not created to exist by itself, but should drive a broader process.

The purpose of this series of 3 articles was to provide practical guidelines for developing and writing NATO concepts and for evaluating the validity and quality of those concepts, with the ultimate goal of encouraging the development of more, thoughtful and useful concepts. I hope that I have fulfilled my promise.

Platforms and Modules, and Autonomy

Patrick Van Hoeserlande

Assumptions

We should reconsider accepted situations from time to time. However, when doing that, we must be aware of hidden assumptions. These are hard to detect and may unintentionally distort our thinking leading to limiting our solution space.

A few weeks ago, I read a NATO document about modularity for naval systems. At first, it read like a very sensible, logical document. Nothing surprisingly and a good approach to destruct this difficult issue. However, something kept nagging me.

The first indication of a hidden assumption was that the word ‘platform’ was undefined. Reading through the text made clear that a platform was implicitly assumed a manned (surface) vehicle. Modules, defined as “a grouping of units, including the support systems that perform a single independent function or task, and are separately testable. A particular mission module can be used in several mission packages” were technical systems, mostly unmanned. Trying to define the term ‘platform’, however imperfect, would at least have uncovered this assumption.

The second indication was that standoff was related to the existence of a Mine Threat Area (MTA) – yes, the document was about Naval Mine Counter-Measures -. MTA points to the issue with the word ‘minefield’. Even if such an area would be indicated on a map, there is no certainty about the whereabouts of the mines and even if there are really mines present. Mines are not limited to well-defined areas either. In short, mines can be and are possibly everywhere. It is more a question about uncertainty, about risk, than about a black-and-white situation.

What is the value of the term ‘standoff’ when there is no clear demarcation line? None. What is your risk appetite? What risk migration measures do you take to lower the risk to your acceptance level, your risk appetite?

Recognizing these assumptions and getting rid of them, what would be the result? Let us explore.

About platforms and modules

We can define a platform as a vehicle used for a particular purpose or to carry a specific kind of equipment or module.

In turn, we define a module as any in a series of units used together to perform a task.

Armed with these two definitions we can conclude the following:

- The function of a platform is to carry things.
- A platform can carry one or more (different) modules. Example: a ship carrying a command and a EOD diver module;
- Modules can be fixed or semi-fixed onto the platform, or easily removable;
- A module can in turn be a platform. We could also talk about modules and submodules in reference to a platform. Example: a ship can launch an Unmanned Surface Vehicle that brings an Unmanned Underwater Vehicle (UUV) to its mission area.
- A platform travels on land, in the air, in space, on or under the sea surface, in cyber space... It must use a medium to 'travel'. In most cases, the medium used by the platform and not the module determines to the component responsible for its employment.
- Platforms and modules may not exist as such; they may only exist when the (sub)modules are put together. Example: an UUV may be an assembly of guidance, propulsion, payload (with modules), and energy modules;
- Platforms and modules may be manned or unmanned.

This discussion fueled by the introduction of unmanned systems is not new. Unfortunately, the unmanned entry gives it a skewed consideration. Implicitly, people regard platforms as manned and modules as unmanned. I intentionally did not broaden the discussion by adding words like 'system, system of systems…as these would further muddy the topic.

If you think about it, the word unmanned is biased too. The word gives the impression that the system was originally "manned". Later 'man' was removed from it. This is not entirely true, although that was the case with earlier designs. "Not-manned" gives the wrong impression too. Maybe we should talk about inanimate systems instead. That word has the additional advantage that it is gender neutral.

Overt – covert

Another confusing use of words is the use of “overt” and “covert”. This black-white approach pushes the requirements for “covert” systems very high and conversations become minefields. Again, it is a matter of managing the gray zone of risks.

What are your intentions? What is your risk appetite that what you are doing will be discovered? How good is the other side at detecting abnormal activities? Although some systems are better suited for covert activities than others are, the discussion is really about intentions and less about systems. An ‘overt’ system can very well be used for ‘covert’ activities, and vice versa.

Autonomy

Another old discussion is that about autonomy. Viewed through the lens of employing inanimate systems, we quickly arrive at levels of autonomy and expressions like “man in the loop”, rules based decisions, artificial intelligence…

However, autonomy is not new. We train soldiers and teams to certain levels of autonomy. You can fill a shelf with books on (semi)autonomous teams. Even after extensive training, we are never certain what military will learn along the way and how they will act in a specific situation. However, we trust they will do the right thing. If not, they will be able to explain it logically to us. That is what we tell ourselves, but we know better.

Legally, inanimate systems make the question about responsibility a bit harder to answer, but from a Command & Control (C2) point of view, there are nothing new[1]. It is about employing platforms and modules in an effective and efficient way taken into account their capabilities and limitations.

The level of autonomy is not only determined by the C2 capabilities, although that may be the focus of the day. There are a whole set of factors with an impact on autonomy whereby the limit is set by the most restricting one. The table below gives an overview of those factors.

These factors are influencing each other. For example, using more AI to drive up the C2 independence requires more energy and thus reduces the time the system can operate without recharging. ‘Crewing’ a system could facilitate the C2 but requires live support modules demanding more energy. Designing a system is about finding the right balance between those factors for the task considering the technology available. The use of modules can make this balancing act a dynamic process.

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[11] A good read about the legal aspects on autonomous systems is HQ SACT’s ‘Current Vision and Legal Considerations of Autonomy V3’, 15 Sep 19.

There is an extreme form of autonomy whereby a system is launched to be never recovered. Deep space systems are built with this philosophy.

Autonomy Table

Factor	Question	Measure	Scale	Limitations	Ideas	Remark
Time-space	How far from the platform can the module operate?	Distance	0 over OTH to independent	• Cable • Communication reach		
Energy	How long can the module operate on the available energy?	Time	0 to long endurance	Internal energy storage capability	• Tethered • Energy stations • Flexible energy usage	
Logistics	How long can the module operate without external logistics?	Time	0 to long endurance		• Self-diagnostics • Self-repair • Graceful degradation • Redundancy	Launch and Recovery Systems
C2	How long can the module operate without external C2 input (without retasking)?	Level of 'autonomy'	Direct controlled to autonomous	Thrust (over and under)	Intra-modules collaboration	• Lessons Identified? • Learning
Navigation	How long can the module navigate within acceptable deviation limits?	Distance	No navigational abilities to independent	Non-GPS environment	Different methods	
Force Protection	To what threat level can the module operate in?	Threat level	Permissive to warzone	• Legal issues • Need to protect • Risk appetite	• Active and passive protective measures • Expandable	

Military and Climate Change

Patrick Van Hoeserlande

A few weeks ago, a Belgian old-ambassador for NATO, warned us to take climate change serious because humanity will not get a second chance. If humankind acts in the wrong way, the world as we know it will be no more. We should put all our efforts in getting it right, the first and only time. It almost sounds like a Clausewitzian introduction to Total War, but then against our current way of living and its consequences.

The call for global mobilization coming from a former NAC participant did trigger the question if there is a role for the military to play in climate change. The question landed in my mailbox where it collected dust until I watched, during a flight on the way back to the USA, the movie 'Living in the Future's Past' about climate change and what we should do about it. It was not the doomsday type of documentary because it offered a non-traditional, individualistic approach to solve the issue. One prominent speaker was US Gen Wesley Clark, SACEUR (July 1997 - May 2000), another high-level NATO figure and a military who gave voice to his concerns about climate change. Time to dust off the question.

Answering the question needs a structured approach if we do not want to fall for an emotions inspired reply. Let me be clear about my personal gut feeling: I believ that we, as military, have a role to play. However, I prefer not to write an emotional appeal for this cause unless I can support it by a logical argument. So, let us dissect the question and see where we end.

The first question that begs an answer is if we, as military, are impacted by climate change. This is an easy one. Of course we are! Think about new frontiers like the High North or the Antarctic that are opening. As the world is changing at lightning speed in geological terms, we are summoned to solve the crises following the ineptitude to cope with the consequences of the changes. Hunger, shortage of fresh water, natural disasters … will not only strain our resources in the call to alleviate human suffering but also lead to more unrest and migrations urging military interventions. Three blocks fighting will not be the rule, not the exception.

However, there is another way in which we will be affected: we will have to operate in regions where there is lack of water, food and energy. We will need to transport everything, or be able to produce it locally without further depleting local resources. This will not only oblige us to enlarge our logistic chain but also underline, as a secondary effect, the rich-poor divide to the people we are to help. Why do we only help when

disaster strikes? Why are we not willing to share our riches with them before a catastrophe happens? Although well-intentioned, our (prolonged) presence could lead to more civil unrest.

Second question is about our impact on climate change . Again an easy answer. Again positive. We are an energy consuming organization and thus a big contributor to global warming and pollution. A live exercise is not only a burden on the budget, but also leaves a gigantic ecological footprint. We should be conscious about this and try to reduce our impact without sacrificing our effectiveness.

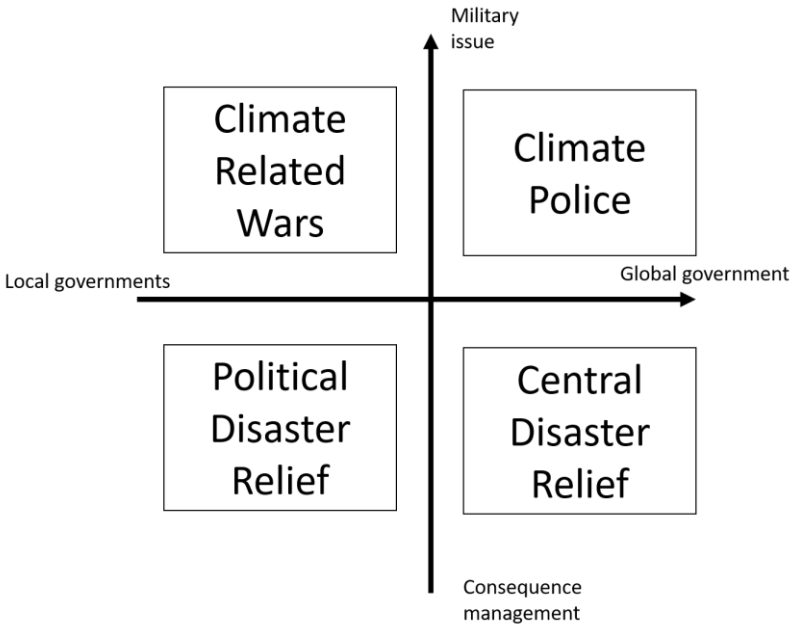
There is a secondary effect: money that flows towards the military cannot be used for combatting climate change. Every tank, ship or aircraft build is a missed opportunity to slow down the change or to alleviate its consequences. It is not an easy task to find the right balance.

Considering that, we are impacted by it and that we have an impact on it, are we involved? Yes, we are involved. There is no way denying it. Military operations are about using lethal force and destructive power to influence the will of the other side. That destruction must be just enough to create the desired change but not one bit more. There is no use in defending if winning means total destruction. You do not defend something by destroying it. In the end, we should make sure that what we have is worth fighting for.

Do we bare a responsibility then? Well, to that one I tend to answer no. As individuals, we have a responsibility, but as an organization, I do not think so. It is not up to us to take military actions to slow down climate change. We can point out the possible consequences and the related costs, but we cannot do more. It is up to our politicians to act. If we would be responsible for all things influencing us and that we affect, then we would become responsible for almost everything. Think about finance, pollution, crime …

Maybe we could turn the question on its head: what could we do if we were responsible? Would we intervene militarily when a nation aims for economic growth by neglecting the ecological impact of its actions? Should we bomb a nation when it does not live up to its climate commitments? No, we cannot do that. We have to leave this to our politicians.

I am willing to take this what-if exercise a step further by considering a representation on a two axes graph. The x-axis represents the level of Global Governance while the y-axis is the level of that the politicians consider climate change a Military Issue.



The graph above shows that only in the case of operating within some sort of global government model, climate change can be a military task otherwise we risk using it as a reason to go to war. Not a very appealing prospect.

Although we have an impact and we will certainly be requested to alleviate its consequences in case of major disasters, we, as military, have no active role in climate change. Our politicians should direct any of our activity in that one-chance-only global concern. We can only hope that the world population, especially we who live in the prosperous part of the globe, takes up its responsibility to hold its representatives accountable to act in the right way, now.

Lost in Administration

Patrick Van Hoeserlande

Prologue

“Tomorrow will be different,” he promised himself. After two deployments in quick succession, Captain James Dunkerd tried to get back into the routine of life as a civilian back home. He had not left a real existence behind the day he flew out for his first tour. His second tour was more a flight forward, an escape from the emptiness of the hours outside the barracks. Now, he had to face reality and try to make the best of it. Not very successful, but at least he did try. Having no family, no wife and far away from the few friends outside the military, his homecoming was an uneventful day.

Now, he was laying in his bed staring at the inspirationless ceiling of his small apartment. After another day, he fully realized the big void of his current reality. His commanding officer had told him to face reality before going on a third mission. Leading troops in combat was too serious a business to be a personal escape. He was more than welcome when he had reconnected with himself.

“Tomorrow will be different,” he repeated himself well aware he said the same thing yesterday, and the days before yesterday. With thoughts drifting towards the camaraderie of brothers in arms, he fell asleep.

Do you exist?

“Shit!” was the first word of James the next morning. Even without looking around he knew he had overslept.

“Stupid alarm. Why didn’t it go off?” He looked at the clock radio and saw the display was dead. Strange. He had replaced the batteries a few weeks ago, so they should have been okay. The room felt a bit weird. He could not pin down why, but something was odd.

“Strange night,” was all he could say. He got out of his bed and started his morning routine of physical exercises, a quick breakfast, a refreshing shower, a shave and getting dressed for a visit to the base. Although he was still on leave, driving to the base was part of his daily routine. But first, he would check his mailbox. Not that he expected to find something of any significance in it, but the routine provided him with some kind of normality.

“What the heck?” was his reaction when he opened the box. It was completely filled. He had never received that much mail in a month, let alone a day. Reluctant to get back in the house, he decided to leave everything there and get it out when he returned. There was no urgency. He headed to the parking lot, stepped in the car and drove away.

The road looked similar but different. The drive felt familiar, yet something was not right. Was he still rocked by last night’s sleep? He shook off the feeling. Today would really be different.

Nearing the end of his morning drive, the main gate appeared. Its familiarity was comforting.

“Nothing wrong, just a normal day with an unusual start.” He did not recognize the guard, but that was not exceptional as they frequently change post. Approaching the checkpoint, he instinctively reached for his ID card. It was not there. Strange? While he slowly approached the guard, he felt in the other possible hiding places. Nothing. Did he forget it at home? That had never happened before. He mentally searched in other spots.

“Good morning, sir. How are you?”

“Good morning. I’m fine. Having a busy day?”

“Busy as usual this time of the day, sir. May I have your ID card please?” asked the guard in a professionally polite way.

“I have a small problem. I don’t find my card right away.”

“Sorry to hear that, sir, but as you understand I cannot let you in.” He could ask the guard to look him up in the database, but he knew that would not help him to get in. The only option was to turn around and drive home to get his card.

“Yes, I understand. Sorry about that, but I thought I had it with me.”

“No problem. Welcome back with your card, sir. Please, make a U-turn there and leave the camp.”

“Wilco. Bye.” He drove back home wondering how he could have forgotten his card. Well, there must be a first time for everything. This was certainly a strange day. He turned right onto the driveway of the apartment complex to be startled at what he saw. Was this the place he had left this morning?

“What has happened here?” he wondered. The place looked much older than he remembered. It looked like the building needed a paint job and the common garden needed reseeding. As he stepped out of the car, people were looking strangely at him. None of them appeared familiar and they did not recognize him either. He might as well be a stranger visiting a friend. He was not alarmed by it as he rarely walked on the parking lot at this hour. He walked up the stairs to his apartment only to discover that his key did not fit. Double-checking the key, he tried again. No luck. Then he heard somebody inside. Strange. The cleaning service was not scheduled for today. Well, lucky him. He reached for the bell.

“Who’s there?” the voice in the room responded. No voice he recognized. A new employee?

“It is me, James. I’m living here.”

“I don’t know any James living here,” was the reply. He checked the number next to the door. His apartment, although he saw the number nine was fixed. It was not hanging upside down. But the number read 139. This must be a joke.

“This is 139 and that is the number of my apartment. Can you please open the door?” he asked with an authoritative tone in his voice.

“You must be mistaken. This is my apartment and I don’t know any James,” responded the female voice.

“Please open the door so that we can solve this issue, mam,” he replied in a more friendly manner. He felt the hesitation and then the decision. Shortly thereafter he heard the noise of the lock being opened. A short, nice looking lady appeared in the opening and introduced herself as Sarah, the owner. With the door barely open, his instinctive reaction was to glance quickly but thoroughly into the interior of the room. His safety scan made it clear that he was mistaken. This was certainly not the room he had left this morning. He considered to ask to be let in for a better look inside, but decided against it. It was not his and no further disturbance of this lady’s daily routine would change that.

“Nice to meet you, Sarah. Sorry to bother you but I see now that I must have the wrong apartment. Really sorry. Before I go, may I ask you how long you have been living here.”

“Almost a year now,” she answered. A pity I never have met you, he thought. She was a beautiful appearance.

“Thank you. Have a nice day, Sarah.” With a last look at the familiar number, he turned and walked away puzzled. He felt she was observing him while he strolled away.

He noticed some pain in his leg. Nothing serious and nothing that needed immediate attention. How could he be so confused to knock on the wrong door? Back down, he looked around for something familiar. He was trying to find something that would confirm he was in the wrong place and give him some peace of mind. Nevertheless, everything felt strangely familiar. Walking to his car, he recognized the office at the far end of the building and decided to ask the clerk running the place.

“Good morning.”

“Good morning. How can I help you?” He did not know this face but decided to try it. He assessed that asking for the owner of number 139 would, if given that information, turn out Sarah’s name, so he tried another approach.

“I’m here to visit a friend, but I forgot the number of his apartment. I don’t want to knock on all the doors, so I thought that maybe you could help me. It has been a long drive and I hate the thought of turning back without seeing my friend.”

“Normally, I’m not allowed to give you that kind of information, but you look like a decent guy after a long day, so I will help you. What is your friend's name? “

“Oh, his name is James Dunkerd.”

“James. Can you spell his last name for me?”

“Dunkerd. Delta – Uniform – November – Kilo – Echo – Romeo – Delta.”

“Are you military?”

“Yes, I am. Just returned from my second tour.”

“Must be quite something over there. Give me a minute to finish this work and look him up in the computer.”

“Thanks. I’m really appreciating this. Please take your time, I’m not in a hurry to return home.”

He turned around to hide his frustration with the situation and killed the time searching for clues of what was happening to him. Although Sarah was living in his apartment, he was sure he was in the right building. What was going on? He felt the pain again, but now in his other leg.

“James Dunkerd. No nothing. You are sure it was with a ‘D’?”

“Yes, 100 percent sure.”

“Nothing. According to the files, your friend did never live here. Of course, by never I mean the last year. These files only go back one year. If you want, I can call my boss to ask if he knows about your friend.”

“Don’t bother. If he is not living here now, I must be at the wrong address. I will check it in my car. Sorry to have kept you away from work.”

“Sorry I could not help you. I hope you find your friend. Have a nice day.”

What was happening to him? How could he be so mistaken? He needed to find his place to get his ID card. His hand felt something in his pocket. A note. He looked at it. A name and a telephone number. A fellow officer from his last tour. She had told him he could call her anytime he felt the need. Although nothing had happened during those months abroad, she came close to be a girlfriend. He suspected she wanted more, but he was not ready for any kind of commitment. At least not outside the military. But this moment was a time of need. Most probably not the kind of call she expected, but that was something to worry about later. She could get him on base and that would solve this awkward puzzle.

He was not fond of cell phones. Too dangerous. Luckily, he knew a payphone close by. Five minutes away from this place. Not taking up his environment, otherwise he would have noticed the changes, he drove absorbed by his personal mystery to the public phone booth.

“Three-three-one-five-two-two-three-six-two-one,” he said loudly as he typed in the number. The connection took ages, or so it seemed. He knew from experience in

combat that time in moments of anticipation slowed down. This call would return everything to normal. Meaningless normality was preferable to the mysterious situation he was in now.

But the period of silent waiting did not end with the sound of relief. No ringing to attract the other side's attention but the signal that the line did not exist. He must by accident have introduced the wrong number. He took the note and pressed the keys in again. More determined. Silence and again the no-such-number tune. Her handwriting was clear. It was not possible to read it the wrong way. She had made sure of that. The stress seemed to increase the pain in his legs. It was climbing up. He would check it later this evening.

While he had a last look at the note, the thought of being on candid camera came up. Although he did not believe this to be the case, he could not resist the temptation to look around. His developed ability to scan his surroundings for anything alarming convinced him nobody was observing him. Not even hidden cameras. His day so far would not look bad in a collection of stories written by Stephen King.

No, he had dialed the number on the note. He considered calling the helpline, but with only a name, they would not be able, nor willing to help him. In his box isolating him from the rest of the world, he tried to come up with the next step. Being boxed in looking for a way out of physical harm was no stranger to him, but this was a completely different situation. There was no bodily threat, only his mental health was at stake. Was he turning crazy?

He decided that the best option was to drive to the town hall to get a provisional ID card. He could explain he had lost his card. They would be able to look him up, verify his identity with the picture on file and even give him his correct address. That was the way out.

He opened the booth and trotted to his car. Exited to end his ordeal, he sped off to the place of salvation. Town Hall looked like he expected. Like somebody on the wrong way to a destination, he neglected or distorted the things that did not fit expectations. Reaching the end was more important than the signs indicating something was wrong.

Luckily there was no long waiting line. It would soon be over.

“Good morning.”

“Good afternoon,” the clerk greeting him with a slight smile. He looked at his watch to verify this statement and saw that it was indeed already afternoon. “How can I help you today?”

“I had a strange day. Too strange to explain. To keep it short: I have lost all my paperwork, even my ID card,” he explained with some relief.

“Sorry to hear that. Let me see how I can help you.”

“Thanks that would be great.”

“What is your name?”

“My name is James Dunkerd.”

“Can you spell your last name?”

“Dunkerd. Delta – Uniform – November – Kilo – Echo – Romeo – Delta.”

“Military?” he asked while he was typing the name.

“Yes. Back from my second tour.”

“Getting used being home again?”

“Hardly.”

“Sorry to hear that. But trust me, it will get better. Trust me, I’ve been there too.”

“I hope so. I really hope so.” Then he saw the same expression on the young man’s face. The same look as on the office assistant’s face. This meant bad news.

“It seems like you are not in our system. How long have you been living in our city?”

He felt a sting of pain in his left hand. He instinctively looked at it and did not see it clearly. With a quick gesture before anybody could notice it, he put his hand in his pocket.

“I was born here.”

“Strange. Let me try something else.” The pain traveled to his upper arm.

“Nothing either. Wierd. Let me think. How did you get here?”

“By car,” he wondered where this was going.

“Great. Do you keep your papers in the vehicle?” Now he knew why the man had asked that question. Of course, his name and address would be on those papers. That would prove he existed and that somehow his data was deleted from or misfiled in the computer memory.

“Yes, right. I will get to it and be right back.”

“You see. We can solve everything here. Don’t wait in line when you return with the papers. I will take care of you as soon as you are back.”

James marched as quickly as he could to the exit straight to the parking lot. He reached for his keys only to discover they were not in his pocket. Strange. He had never left his keys in the car. But then again this was not a normal day. Certainly not what he had meant by “Tomorrow will be different”.

He arrived at the spot where he had parked the car. That is where he thought he had parked it because it was nowhere to be seen. He looked around in confusion only to conclude that this was indeed the place. But, where was his car? He remembered the tree a few meters away. The cars parked near his now empty spot. Did somebody steal his car because his keys were in? What else could go wrong today? What now? With no document, the helpful clerk could do nothing, and he was the only one who could help him to escape this day turning into a nightmare.

Dead man walking. That is how he was feeling now. He was condemned to a life without identity, without existence. He stepped with the pace of a fully equipped old-style helmet diver. The friendly administrator saw him coming and waved him forward.

“No paperwork?” inquired the clerk with some surprise in his voice.

“My car is not where I parked it. Somebody must have stolen it,” was his meek reply still shaken by the incident.

“That would be very bad. But, before you can go to the police, you need to be able to identify you. You cannot declare a car theft if you do not exist. And according to our system, you do not.” The pain in his left arm and legs reminded him he had to take care of this problem too, soon. First, he needed to solve this identity problem.

“But I’m alive and standing here before you,” in an attempt to prove he existed.

“I know, but if you are not in the system, you officially do not exist. No matter how real you look to me. Let me think. You told me you were born here, right?”

“Yes, that is right.”

“Your birth certificate is not in our database, but that does not mean that it does not exist on paper.”

“Okay, where can we find my birth certificate on paper?” He had a flash of hope that this bad day would soon end.

“Give me some time to walk over to my colleague and to search in our archives. It should not take long to find your certificate and help to get you your life back.”

“Great. That would be great if you could do that.”

“While we do that, you can walk through that corridor,” he pointed to a hallway to the left. “Take the second door left and you will find a small waiting room. There is coffee and water. Help yourself.”

“Thanks. I could use some.”

“Anything to help somebody protecting our nation. Glad to be of service.” The man put a sign that his office was closed and that he would return shortly. He turned and walked to the back of the room towards archives.

James turned and headed towards the waiting room. Before taking a cup of coffee, he would check his legs and arms. He suddenly felt a bit wobbly and went over to a cozy chair. He lifted the lower part of his pants and was shocked at what he saw, or rather not saw. His hands had disappeared. He could feel and move them, but he did not see them. As if they did not exist. Regaining his posture, he proceeded towards his feet. Afraid of what he would discover he hesitated for a moment. Nothing there either. Worse, it seemed like he had lost the sense of the lower part of his legs. His hands tried to touch those parts, but they went right through it. What was happening to him?

Meanwhile in the archives, although doing their utmost best the sympathetic clerk and his colleague did not find any birth certificate referring to James Dunkerd. Not even a trace of any family member. It was like that person did not exist. After more than an hour of opening drawers, they called it a day. They would renew their efforts in the morning. He walked to the waiting room to tell Mr. Dunkerd the bad news, but he would stress that he had always found a solution to an administrative issue and he had no intention to change his perfect record. Just a matter of time.

However, the room was empty. No trace of Mr. Dunkerd. Gone. He wanted to turn back to his desk thinking lowly of his people skills because he was sure that Mr. Dunkerd was profoundly desperate. And desperate people never leave without some form of hope for a solution. In his movement, he discovered a note on the table next to a cozy chair. He picked it up.

“Thank you for believing I existed, J.D.”

“Of course, I did. Why wouldn’t I?” He shredded off a creepy feeling coming over him. A shiver ran down his spine. No, that could not have happened. There must be another explanation.

“This is the strangest of days,” he said aloud to cast away his dark thoughts.

Epilogue

Moments before the clerk entered the waiting room, the janitor threw a plastic back in the trash container. People sometimes leave strange things behind in the city hall. Why would somebody leave his clothes behind in a waiting room? Certainly, neatly placed as if somebody was sitting in a fauteuil. Maybe some kind of bad joke. Anyhow, it was no longer his problem.

A year later, while moving the city archives to a new storage area, an interim found a half-destroyed barely readable birth certificate in the drawer ‘DM – DV’. The name read something like “Jane D i n k r □”. Thinking everything in the archive was important, he walked to his supervisor.

“Look what I found. An old, barely readable birth certificate. I think the name is Jane Dunkirk, or something like that.” He handed the document over to her. She gave it a quick look.

“Throw it away.”

“Why?” he replied surprised.

“First, that file will already be in our database. Secondly, it will take some time to link this document with the right name. Time we don’t have. We must move the archive and we will not waste time with one document while we have tens of thousands to ship. Destroy and get to work.”

He watched the shredder eating the birth certificate. What a strange thing to do.

Afterthought

Sometimes the feeling that administration defines who and what we are, creeps on me. In those moments if feel we are no longer defined by our actions or memories, but by what is known by some alien bureaucracy. The French philosopher René Descartes’ “Cognito ergo sum” replaced by existence on ‘paper’. It is as if flesh, blood, and thought are only a representation of what is filed. No existence without a file. Virtuality taking over reality. A creepy feeling leading to the unusual story above. I hope you have enjoyed it.

The Fellowship of the Uvumbuz

Patrick Van Hoeserlande

Meet the People

In some faraway land lives a tribe outsiders call ‘The Lone Walker’. They refer to themselves as ‘the people’, or the Abantu in their language. An encounter with an Abantu is rare. They are giants whose torso stays above the lower leaves layer of the forests. Most outsiders only see long legs patted with protections when a walker passes by. For a normal person, all giants look alike and some believe there is only one lone walker. The giant’s view of the ground is obstructed by branches and leaves. Even in open terrain, you will not get the chance to talk to a walker as they are not interested in small talk with small people.

However, if you are tall yourself or carry a long stick with an orange, their favorite color, flag they interpret this as a sign you have information for them and will stop in front of you. Those encounters are very brief because giants do not lose precious time talking to people. They only want the information you offer them. That is it. The conversation is also limited because the tongue of the Abantu is rarely spoken outside their tribe and communication most likely happens in simplified sign language. Once they have what they need, you better get out of their way.

Unlike the others think, the tribe does not only have giants or isiqhwag but also smaller, we would consider them as small but within normality, tribespeople or omncane. However, only the giants travel far and come in contact with outsiders. That is why outsiders think the whole tribe must be big walkers.

Being big with the Abantu means everything. The giants, males and females, are the ones holding the meetings, or umhlangans, to decide what will happen. During their gatherings, they discuss the future of the people. These discussions turn very heated and it is not unusual to see hot air escaping from the place of gathering. After a tribe council, the members are soaked in sweat and completely wasted by the release of all that energy.

Besides debating and deciding on high-level issues, giants are the ones who go on a quest. There is no use to send the little ones, they travel too slowly. Whenever there is something deemed important, they select the bravest travelers to go on an ukwenza to

look for it. Giants have the speed and endurance to cover huge areas in search of whatever they need to find. And they are convinced they excel in it.

Being a giant is a time-consuming but very fulfilling and respected duty. That is why Abantu parents, small and big, hope their children will become giants. All kids indifferent to their heritage may be born a giant. Although there are many beliefs on why a child becomes a giant, and consequently many useless rituals to influence the process, the real cause of the growth difference is not known. The first signs are apparent around the age of five, but sometimes this happens later in life. By reaching puberty, the distinction between an isiqhwag and an omncane is quite clear. That is also the moment the education of the boy or girl changes drastically. A giant kid is introduced to the circle of leaders, while the small children stay with their parents to be prepared for a place in the tribe.

If you now think that the life of an omncane is a bad one, you are mistaken. They rarely leave the dominion of the tribe. They find happiness in the small pleasures of life and are not interested in the big issues of the here and now. These are the worker bees taking care of the daily routine. They are the bakers, butchers, handymen, farmers… doing the work. Without them, there would be no tribe to lead. Some even say that the smaller people run the tribe. A thought the giants find preposterous.

Anyhow, life was good. The people lived well while their walkers roamed the surrounding plane in search of… important things.

The Interest in the Uvumbuz

It started with one giant coming home telling about some strange things he had seen. Then another one. A third told stories about a tribe that was sitting when holding a meeting. This way their meetings were less tiresome and they could discuss longer on serious matters. Why had they never thought about that?

Then another told about outsiders that had a special arrangement for the seating. The experienced walkers would sit on one side; the older giants would sit on the other side. They applied it and were very happy with this new arrangement. Why had they never thought about that?

Another walker came in with a story about travelers using white sticks. These sticks made walking easier. So, all the walkers painted their sticks white convinced that they would walk faster. Why had they never thought about that?

That question evolved into the main topic of the tribe meetings. A lot of hot air was vented on what it was that they missed. How comes that outsiders came up with those fantastic ideas, while the only thing they could do was to copy it. They needed to find

what it was that the outside tribes possessed and they did not. The council decided for the first time to send out ten walkers at the same time. The tribe was in crisis.

Well, that was what the giants thought. For the small people, it was business as usual. They needed to care of the collective, of the day-to-day activities and no fancy chairs or white walking sticks would change that. Crisis? Well, if the giants say there is one, then there must be one, right? Life went on while the walkers went looking for what they missed. For the thing that would change everything.

After a fortnight, the ten came back within the span of a day. When the last arrived, the giants held a tribe council. All ten told the story of their travel. It went on for hours, days. For the first time since the people could remember, the council was interrupted for a few hours, because the giants were too exhausted to continue. The smaller members started wondering if there was indeed something extraordinary going on.

Three friends, Ukuk, Ngokush, and Cabanga, had to know what it was and they agreed to spy on the council once it would restart. When the giants woke up and trotted to the meeting place, they followed quietly. Ukuk, the informal leader of the trio, knew a nice spot to observe the meeting. Close enough to hear the conversations, but far enough to stay undetected. Not that listening in was forbidden, but it was considered a waste of time for small people. As a rule, an omncane did not attend a council.

There was one exception to the unspoken rule and that was, Kanipha. He was always invited to the council. He had not only the ability to listen carefully about what the giants were talking; he could also summarize the discussions very well. He could even recap extremely heated discussions in such a way that all would agree. The giants appreciated his skill and gave him the last word before the chief concluded. Unfortunately, his way of compressing a council meeting in a few lines to everybody’s liking meant that most of the time his words were not very precise. Every member heard what he or she thought about the issue. Being precise would have led to unacceptable conclusions.

The three saw Kanipha walking through the legs of the council member listening carefully and attentively. He was sweating because of the heat, but he could outlast any giant during a council. It went on for hours, until at last voices quieted down.

“You had a long and fruitful discussion. A meeting so though and long that for the first time, you had to hold a break before you could finish this council.” A low rumble marked their agreement.

“We have heard the stories of the ten. They told us about new things they saw or were voiced by outsiders. We have discussed all that information. All these efforts were

worthwhile because our combined efforts had shed light on what we are looking for," continued the chief. Again a low rumble.

"At last, we know how to recognize the uvumbuz!" The chief was indeed a happy man.

The chief pointed to Kanipha, the sign that he expected him to summarize the discussion. He walked slowly to a position next to the chief. Took a good look at all present and summarized the meeting in a rhythmic tone:

"Unearth fallen.

Untouchable imagined.

Uncertainty defied.

Unknown perceived.

Trinity overlooked."

A low rumble rolled through the audience. That was indeed what they all could agree.

"Thank you, wise man, for this perfect report of our discussion," the chief took over. "Our travelers know clearly what they have to look for. They will leave at first light. Good night my fellow isiqhwag."

After these words, the chief left the meeting followed by the rest of the council.

"Always interesting to observe a council meeting," concluded Ukuk.

"That Kanipha fellow is good at what he's doing," added Cabanga.

"But what does that all mean?" questioned Ngokush.

"Well, that our giants will travel again," answered Ukuk. They laughed.

"Well, well, who have we here?" The voice of Kanipha. Sudden silence.

"Uh, uh, we were watching the council and were discussing your wisdom to summarize such meetings," tried Ukuk.

"No worries, friends. There is no rule against listening. Only the idea that it is time wasted for you. Relax," replied Kanipha.

"Yes, we know," they said almost in unison.

"Only, only, it is a pity that only they can look for the uvumbuz," uttered Ukuk.

"Why is that?" asked the wise one.

“Uh, because they are the travelers?” Kanipha shook his head.

“They walk faster than us?” Again a no.

“They are smarter?” No.

“We don’t know,” concluded Cabanga.

“But you are going to tell us,” probed Ngokush.

“No, I will not tell you why, because there is no rule stating that only giants travel,” instructed Kanipha. The three were surprised by that answer. They knew of no omncane telling stories about strange places. They thought that was because they were not allowed to go on a journey.

“Why is there no traveling omncane?” questioned Ukuk.

“Well, because no omncane is doing it,” was the simple reply. “If you are so interested in the uvumbuz, why don’t you three go looking for it?”

“Because we don’t know where to look?” said Ngokush.

“Walk four days towards where the sun sets. On your last evening, look for the mountain in the light. You’ll find what you are looking for on that top,” spoke Kanipha.

“Why would we find something the giants are looking for?”

“Does the eagle sees the same world as the frog?” Kanipha’s reply gave them something to think.

“But, how do we know we found what we are looking for?” tried Ngokush again.

“You know what the giants know. Unearth fallen. Untouchable…“ His voice died while he walked away from the little gathering. Leaving the three friends behind.

The Ukwenza of the Frogs

The next day, the village was in for an early rise. Normally, only a few people are waving out travelers, but rumors had traveled faster than giants do and by morning, the whole tribe knew that this was not a routine ukwenza. Their giants left in search of something life-changing, maybe even for the small people. Before the first traveler started her journey, there was a crowd on the street cheering. It went on for hours until the last disappeared behind the horizon.

Ukuk used the crowd to get next to his friend Ngokush. He kicked him in the side.

“Ready?” he asked.

“Ready for what?” his friend tried.

“Well, you know. For travel.”

“You are serious about going?”

“Of course. Let’s do this together.”

“What about Cabanga?”

“She’ll go if you go,” smiled Ukuk.

“Yeah, right.”

“Ok, that’s a go.”

“Hey, I didn’t say that.” However, it was too late. Ukuk was already next to Cabanga telling her they would leave in an hour. Ngokush saw she looked in his direction, nodded and left for her house. No way out. He turned around to get his stuff. Time to get ready.

An hour later, they met at the edge of the village. There was no crowd to wave them out. It was better this way. Nobody needed to know about this mission to fail. They would be the joke of the tribe if they returned empty-handed. No, it was better nobody knew about their plan. They could always make up a story to explain their long absence once they were back.

“Let’s start this journey,” Ukuk said with some excitement in his voice. And with that, the first Ukwenza of the small since long began.

“How will we call our group?” asked Cabanga after a while.

“Right we don’t have a name,” replied Ngokush.

“We should have one,” said Cabanga, “what do you think about Cangokuk?”

“Neh, too ordinary. Everybody makes up that kind of group names. We need something with more ring to it.”

“The small walkers? The little giants?”

“That sounds nice, but…” appraised Ukuk, “what did Kanipha tell us about seeing things differently?”

“That an eagle and a frog see the world from a different perspective,” replied Ngokush.

“That is it, the frogs,” smiled Cabanga. “The Ukwenza of the Frogs.” The two others looked at each other and simulated the low rumble to show their agreement.

During four days, they walked through forests, fields, over hills, and across rivers in the direction where the sun sets. No obstacles were too big to overcome. They only stopped when it was too dark to travel safely. It was hard work but that did not stop them from having fun or enjoy a good meal. Ngokush proved to be an excellent cook with his small field kettle. Cabanga was a born storyteller, while Ukuk could find the best camping spots, well-protected with magnificent sights.

There were not sure which mountain they were looking for, but that did not matter as long as they reached it on the fourth night. By midday on day four, they could see a lone mountain within reach of daylight travel. That must be the place. As they approach the solitary mountain, they could see a big tree on top. Was that their objective? Would the secret of the uvumbuz be hidden there? As they approached the mountain, the tension of expectation raised.

Suddenly, they stopped. A deep valley with a wild river below blocked their way. Traversing it meant they would not reach the treasure before dusk. Too late? However, they had no other option, so they descended the steep wall driven by the smell of their goal.

Unearth Fallen

Tired and a bit frustrated they reached the foot of the mountain when day turned into night. The full moon was already beginning her travel through the sky. Clouds were gathering above them announcing a violent thunderstorm. They were down while they had to be up there.

Ukuk and Ngokush sat down in disappointment. Their quest ended midway. A failure. Purposeful traveling was indeed something for the giants.

“Hey guys, look at that,” she said pointing to the mountain. Without much enthusiasm, both stood up and walked over to her. “Don’t you see it?”

“See what?”

“You remember the council meeting wherein they concluded that the uvumbuz should be bathed in light?” she explained.

“Yeah, they even thought it would be a star falling on the earth,” remembered Ngokush.

“Well, don’t you see it? The moon!” she replied. The moon had risen a bit and was shining just behind the mountain contrasting with the old tree on the top.

“Yes, the tree. That is where we will find it. We didn’t need to be on the top, but right here,” said Ukuk understanding the wrong assumption upon which their decision was based. They wanted to look for it from a point of view of a giant, but they were not eagles, they were frogs. That is why walkers did not find what they were looking for. They could simply not see it from the right perspective. It all made sense.

“Leave everything, we have to go to the top and find the uvumbuz before the storm hits us,” he yelled and started to run uphill without waiting for his friends. The two others stood for a moment puzzled at what just happened but then decided to follow their friend. There was not much time. The clouds were gathering fast. The mountain was not inclined to give up its secret easily.

As they reached the top, the first flash of light ignited a firework in the sky. A roaring thunder applauded for every flash like a very happy public. The nearby crackling of superheated air sounded like doomsday. The lighting touched the tree with one of its fingers setting the centuries-old wood ablaze. The tree fell and burned fiercely. Only rain could save it, but that did not come.

The three stopped in their track. They looked shocked. Failed at the finish. They stood there as time stood still. Then suddenly, Ukuk sprinted to the tree.

“Don’t do it. It is too late!” yelled Cabanga. Ngokush wanted to go after his friend, but Cabanga stopped him. “Don’t!”

Ukuk had no idea what he was doing or looking for, only that he had to run to the tree and salvage whatever it was. Unearth fallen. He had to find it now. There was no later.

Arrived at the tree, he saw that the power of the light had unrooted part of the tree. Everything was burning. Too hot to take something with him. Then he saw it: a small piece of the roots was broken off and only one end was in flames. He grabbed it and sped back.

They saw him coming with the burning root. Was that why they came here?

“We have to go down before it starts raining and make sure to keep this burning,” Ukuk yelled while passing by. The two followed without questions.

Back down, Ukuk asked for the field kettle.

“Look for some dry wood to fuel the flame,” he asked.

After a while, things calmed down. The rain did not come and the light show drifted to the West.

“This is all that I could take from the tree; a burning root,” Ukuk explained.

“But how can that be the uvumbuz?” Cabanga questioned.

“I don’t know. But think about it: Unearth fallen. The lightning knocked down the tree that was lit by the moon on the fourth evening. The fall of the tree unearthed this root. So that must be it,” he explained.

“But how do we know that it is the right thing?” Ngokush asked. “Why that piece of root and not another piece?”

“I don’t know. But it was the only thing left. It must be that,” trying to convince his friends and himself.

“Let’s eat and go to sleep,” she proposed trying to cool down the excitement of the last hours. Tomorrow, they would head back to the tribe.

Untouchable Imagined

The night did not bring surprises, nor solutions. There was no certainty that they had found what they were looking for, but they had to believe it was. If they made it back within the coming days, they could come up with an acceptable story explaining their absence. Clueless traveling longer would make it harder to repudiate their failed quest. Returning now left that honor saving possibility open. So, they left for the long walk back.

On their second day, they would pass a lake. A good thing because they needed to refill their water bottles. As they moved towards the water, they saw some strange figures stepping out a boat. Two persons dressed in blueish, long coats. Their skin was pale and looked like it was glowing.

“What are those?” asked Ngokush.

“Ssst. These are men from the Water People,” answered Cabanga.

“Water people? But I thought that tribe was a fantasy.” Ukuk was puzzled.

“No, look at them. They match the description. And they are real,” she assured.

“Let’s meet them. They don’t look dangerous,” proposed Ngokush.

“No. Stay! They may not look dangerous, but those boxes are,” Ukuk said.

“Yes, those boxes contain ghost dogs. The stories, and it is now clear that these weren’t stories, say that water people use those dogs, or whatever they may be, to catch their victims. Once caught, they take the victims to their tribe and turn them into one of them. That is how the tribe survives,” she explained. “Let’s move away silently.”

As soundlessly as possible, they increased the distance between them and the water people.

“Oh, no!” Ngokush fell over a root. The noise attracted the attention of the men at the waterfront. The two at the waterfront walked to their box and opened the lit. Out came some animal that resembled a dog with rough hair. They had the same blueish shine as their owners, but much more intense. They were a kind of mesmerizing, but that did not last long as danger was imminent.

“Run!” Ukuk yelled. The trio took off at top speed. Soon their pace slowed down. The distance between them and the dogs melted away quickly.

“We cannot outrun them,” Ngokush said closing the queue. “We have to come up with something else or we will soon be turned into water people. And I don’t like the color blue.”

“Stones! Run to those stones and let’s use them to stop the dogs,” Ukuk explained. They veered to the right. Stopped. Each took a big boulder. Turned around and waited for the right moment.

“Throw when you are sure you will hit. We only have three stones for the two dogs,” instructed Ukuk. Ngokush, the strongest of them, followed the dog running in a half-open space of the forest, while Cabanga, convinced of her precision, went for the dog closing in through the trees. Ukuk switched between both targets as he had decided to be the third thrower in case one missed.

“Be sure you hit your target,” Ukuk wanted to say, but Ngokush launched his stone before he could.

“Thoomp.” The blue dog disappeared the moment the huge stone landed on its head. It was a strange sight. The dog was gone. Ngokush felt great, but Ukuk found it startling. Why it did bother him, he had no clue, only that is was too easy to be told in stories. No time to agonize about it. He turned his attention to Cabanga’s dog. She was still following her target. The dog was further away and disappeared out of sight from time to time. That would be a hard one to kill. It disappeared again. Suddenly Cabanga threw her stone while the dog was nowhere to see. Ukuk’s adrenaline kicked in. She had missed it. But then, out of nowhere the dog popped up from behind an old tree just on time to meet his fate.

“Thoomp!” Only her stone touched the soft ground of the forest. The dog was gone.

“Amazing throw! Ngokush did you see that?” Ukuk spun around and saw his friend was already engaged with another dog. He turned around to see Cabanga and she too was engaged in a new dog. Soon, the three were taking turns in the fight, but the dogs keep

coming. Where did those ghost animals come from? Wait, I already vaporized that animal, and here it is again? He starting to grasp why he felt uneasy when Ngokush had hit his first target. Only two dogs were chasing them. So hitting the animals was not killing them although they imploded. Another ‘thoomp’ interrupted the awkward silence as to prove what Ukuk just figured out. That is why nobody could escape those dogs, there were not real dogs. You could never stop them. They kept coming.

It was his turn again to throw. Aim, throw, ‘thoomp’. Soon a new attacker was coming from the waterfront. Then it hit him, every time somebody vaporized a dog, the same animal would leave the box to resume the attack. The animals would keep up until his friends and he would be too tired to throw stones, and that would not be long. Ngokush’s reach was getting shorter, Cabanga’s precision was getting worse and he felt the pain in his muscles. They had to do something. But what?

After his successful throw, he sat down to think.

“I take a short break. Keep throwing.”

He sat down and looked at the flame in the kettle. What was the solution? Then suddenly he understood that throwing stones at the dogs was not the solution. Yes, they were a visible and urgent danger, but not the cause of their situation. Imploding them offered only short-lived relief, although satisfying at first, but soon they found themselves in the same situation. There must be something else to end this.

It felt like the burning root was telling him: “Untouchable imagined.” That was it. The real cause of their perilous situation was the water people. They were sending the dogs. However, how to make them stop the hunt. They were too far away to be hit with stone, untouchable. He looked around. A black pool. Tar! Tar burned. The water people needed their wooden boat to get back to their tribe. That is it!

He turns towards Ngokush and told him to take care of all attacking dogs when he told him to do so. He needed Cabanga for something else. His friend was puzzled but agreed to do what was asked of him.

“Whatever you’re thinking of, do it quickly. I will not be able to keep that up for long,” Ngokush urged Ukuk.

“I know, but it can safe us,” he replied.

Then he picked up some heavy and lighter stones. Rolled the lighter ones in the black puddle.

“Cabanga?”

“Yes?”

“Do you remember where the boat of the water people was put ashore?” he asked her. Another ‘thoomp’.

“Yes, I do,” she replied with question marks in her eyes.

“Would you be able to hit her boot from here?” he asked.

“Yes, I think I could,” she replied, “but I will need some luck.”

“OK, when I give the signal, you take a black stone from me, they may be warm, and try to hit the boat. Don’t care about the dogs. OK?”

“OK!”

Ukuk picked up a stone and held it in the flame. The small glow indicated that the tar started burning; soon there would be a bigger flame. Time to act.

While Ukuk was preparing the stone, she tried to picture where the boat was because she could not see it from here.

“Now!” Cabanga stretched her arm opening her hand expecting to receive a stone from Ukuk. The moment she felt the weight, her brain instantly calculated the power needed to hit the boat. Her throwing arm moved backward. Her muscles tensed up. And, there went the projectile. She did not wait to see where it hit. Hand open for the next stone.

Meanwhile, Ukuk had a quite look to see if Ngokush needed assistance, then took another black stone, lighted it up and passed it to Cabanga. No time to assess if she was hitting the boat. They just had to trust her capacities and luck. Ngokush was too busy defending their position to glimpse in the direction of two others. He had no clue what was happening next to him.

It was just a matter of time. Or they succumbed to fatigue in which case the dogs would be successful and they would be integrated into the tribe of the water people, or Cabanga would hit the boat convincing the water people to stop the hunt and retreat. Seconds seemed to last minutes, and minutes turned into hours.

“Smoke!” It was Cabanga.

“Smoke is good,” told Ukuk. Smoke reaching for the skies was a good sign. Cabanga was threatening the boat or at least something was afire. Will their attackers retreat or stay? Soon, their ordeal would be over. One way or another.

Ngokush stopped throwing. He stood there ready to launch another stone. But everything was quiet. He looked around. Nothing. Ukuk sensed the change too. He

handed over a black stone to Cabanga and stood up. An empty forest. No howling. No dogs.

“There they go! They run away!” yelled Cabanga. Indeed, they could see the smoldering boat sailing away on the lake. They had won. They yelled it out. They felt strong. Invincible. Soon fatigue kicked in.

“Let’s make camp here and stay for the night,” proposed Ngokush.

“Isn’t it dangerous here?” asked Cabanga.

“No, I don’t think they will return soon, and if they would, we have the puddle of tar nearby. Enough to scare them away, again. We stay rest and leave in the morning,” Ukuk concluded.

They prepared for the night. While enjoying dinner, Cabanga asked how Ukuk came up with the idea of throwing firestones at the boat. He pointed to the kettle and said “the uvumbuz”.

“It was the root that gave me the idea of ‘Untouchable imagined’. We were fighting against the things we saw and were a direct danger, but we had to look for the things that were not in plain sight. We had to stop the water people by threatening their boat. You had to imagine where it was to hit it,” he explained while pointing with his head to Cabanga.

“So, we really found the uvumbuz,” concluded Ngokush.

“It seems so. What would be meant by ‘Uncertainty defied’?” asked Cabanga.

“No idea, but we will understand when the time is right. Just like we did now,” tried Ukuk. While reliving their heroic battle against the water people, they fell asleep.

Uncertainty Defied

The next day, Cabanga woke up the rest of the fellowship. The sun was almost up. They should start early because they had a long day ahead. They had agreed to make up the time lost after the encounter with the water people. The second day passed without incidents. It was a nice and happy walk. After the eventful last days, they enjoyed the voyage back home.

When the sun touched the horizon, they made camp. Ukuk took care of the uvumbuz, Ngokush made dinner and Cabanga prepared the sleeping places. Dinner was delicious. They were in a familiar-looking environment in a well-hidden camp. Feeling

overconfident and tired, they refrained from a night watch. They fell asleep next to the fire.

With the dark came the silence. A peaceful silence.

However, with the dark also came danger. A slow, but deadly danger. Branches and leaves moved without a sound. A silent killer slowly but firmly entangling its victim. Its prey unaware of what was happening, until it would be too late.

“Cabanga!” yelled Ngokush. He had barely opened his eyes to see her entangled in a woody knot. His yell woke up the rest of the party. Cabanga could only produce a muffle.

“What …?” but Ukuk directly saw what was happening before he finished his question. He directly followed his friend in an attempt to free her. Both were hacking the knotting ivy, chopping of roots. However hard they were slashing and hashing, the plant’s grip on Cabanga tighten. The roots were growing back faster than they could chop them off. She would soon be crunched inside the growing knot.

Ukuk needed to catch his breath because he was near collapse. He knew that doing the same thing over and over again would not lead to a different outcome, but he had no clue what to do to free Cabanga. In despair, he turned briefly towards the uvumbuz in the kettle as he felt drawn to it. The light flared up a bit. ‘Uncertainty defied’. He had no clue what these two words could mean if they even had a meaning in this situation. He turned again for a desperate effort to save his friend.

In the glimmer of the light, he saw two bigger roots coming out of the dirt leading to the big knot. They were barely distinguishable, but he understood the importance of this observation.

“Ngokush, take your ax. Slash it at the far left and right of the knot and as hard as you can,” he instructed.

“Why?”

“I’m not certain, but I think that is the only way to free her,” he explained.

Observing that their current method would never be successful, Ngokush quickly moved in the right position to do what was asked. With a larger swing, he planted his ax right where Ukuk had seen a root. The knot shuddered and loosened partly its grip. Smelling victory, he swung again and with all his might crashed the blade on the other side. The murdering bundle of roots fell apart. Ukuk was waiting for that moment. He snatched Cabanga out of the deadly stranglehold. Not too soon.

Once freed, they had to move away because the knotting ivy was maybe beaten, but not dead. They had to move away from this deathtrap. After an hour of walking in silence, they decided to take a rest, but not without somebody looking out for danger. They had learned their lesson.

Unknown Perceived

They were not eager to start a new day. During breakfast, they discussed the last night's event. Cabanga was still feeling a bit tight, but besides that, she did not seem to suffer from permanent damage. No ribs or bones were broken. Only a few brushes.

"How did you know that I had to cut those two roots?" asked Ngokush.

"I saw them briefly in the light of the uvumbuz after it reminded me of the next sentence. I was not sure that it would free Cabanga, but my gut told me I had to try it. Just keep on slashing into the knot did not seem to help," he explained.

"You two defied the knotting ivy by following an uncertain solution. Uncertainty defied," she concluded. "We surely have found the uvumbuz. We did what the giants couldn't." She smiled.

"Yes, we did. Together," said Ukuk.

"Yeah, we did, but you, Ukuk, are the one who understands the uvumbuz," replied Ngokush.

"I just got lucky," Ukuk tried.

"Three times," teased Ngokush while pushed Ukuk.

"I'm ready to start walking. Come on guys, let's go home," she proposed.

The colors of the stories about their adventure shone more bright as their feet covered more distance. Their spirits improved as they came closer to the village. They started recognizing the curves, the scents and the sounds of the environment. Soon they would be welcomed as the first omncane who solved a tribal problem giants could not. But they were not there yet.

"What do you think 'Unknown Perceived' would mean?" asked Ngokush.

"Maybe that we found the real uvumbuz?" tried Ukuk.

"Yeah, that we know that it is the real thing," continued Cabanga. "But, what about 'Trinity overlooked'?"

“That must be us. We are three, the trinity. And the giants look over us because we are small,” explained Ngokush.

“That could be. If so, that means we will have nothing to worry about for the rest of our trip. All of Kanipha’s sentences fulfilled,” concluded Ukuk.

“His skills are really phenomenal.”

Happy spirits, pleasant walk.

After another day of traveling, they reached the rolling plains of the tribe. Almost home. There were fantasizing about the surprise on the faces of the tribespeople when they would show up with the uvumbuz, and of course with the stories that proved they had found the real one. About the feast the tribe would organize in favor of the ‘The Ukwenza of the Frogs’. About …

With a loud crack and rumble, the bottom opened beneath them. Like a giant monster. The earth swallowed them and the three disappeared in the underground belly. As quick as it happened, silence returned in the forest, but the trio was gone.

They were falling slamming against the walls of a natural chimney. For them, it seemed like an eternity. All happened in slow motion. Their ordeal did not stop as they smacked onto the dirt floor. Stone and dirt loosened by their fall had followed them and was now coming down on top of the friends. The noise died quietly after a while.

They had entered an ever-dark world. The home of cave-dwelling animals. With no light, they were trapped. No way out. Light would not have helped much, because the only certain way out, was up and that was impossible. Maybe it was better had they not survive the fall.

“Uh, uh,” the voice of Ngokush. “Ukuk?! Cabanga?!”

“Uhe, uhe,” a dry cough somewhere.

“Who’s coughing?”

“Me. Cabanga. I feel somebody moving next to me. Is that you Ngokush?”

“No, I’m here,” knowing she could not see him, “it must be Ukuk you feel moving.”

She tried to touch the body next to her. “Ukuk?”

“Yes, it’s me,” the faint voice of Ukuk.

“Everybody OK?” asked Ngokush. Two confirmations.

“Any idea where we are? And how to get out of this darkness?” asked Cabanga afraid of the answer.

“No, no idea.”

“Do we have light? Is the uvumbuz still burning?” informed Ukuk. “Where is it?” with an undertone of panic in his voice.

“There, I see a faint light,” shouted Cabanga. She crawled towards it. “Yes, it is still burning.”

“Great, we have light. Now, we have to determine where to go.” Ukuk went to Cabanga. Ngokush joined them. With three, they scanned their direct environment. Up was not a way out.

“It seems that we can only go that way,” Cabanga pointed to a tunnel.

“Let’s collect our gear and follow that tunnel. Hope it will lead us out of this cave.” Ukuk knew that hope was not a method, but that was all they had for now. A plan however sketchy is better than no plan.

It took them a few moments to collect the most important stuff. They moved through the tunnel in close formation, as the uvumbuz was only a small flame. Luckily, the cave floor was quite even, so walking was not a difficult venture. They walked for hours in the dark without any idea where they were heading.

“What do you think made these tunnels?” asked Ngokush.

“A subterranean river?” hypothesized Cabanga.

“I was thinking that too,” confirmed Ukuk, “with a bit of luck, we find freshwater.”

They took a pause. They had no idea how long they were walking. Without daylight, there was no telling what time it was. They felt like it was a good moment to rest. Cabanga took the light to look around. They had stopped in some kind of room. Minerals reflecting the flame created a ghostly ambiance. Then it moved. Dancing reflections?

“Hey, look. This is strange,” called Cabanga.

“What?” asked Ngokush.

“If I turn like this, the flame starts to dance,” demonstrating what she meant.

“It is as if …,” Ukuk started.

“… there a little wind and that only means an exit,” she completed.

“Yes, that is right. Time to move,” that was Ukuk again. They picked up their stuff and followed the flame. It took them a while before they saw a faint glow. Daylight? Must be as the flame tilted towards that direction. Unintentionally they hastened the pace.

Cabanga, still with the uvumbuz in her hand, suddenly stopped. “Halt!” The others followed her example.

“I know where we are. Look down and then up, and you will know it too,” she explained. The two men looked down: water. And up: a round opening. The village’s water well.

“We are under the village,” said Ngokush.

“Right. What now?”

“We could yell?” proposed Cabanga. All three shouted at the top of their lungs. But no movement to be seen. Again. Nothing.

“We could stand here and shout, but we are not even sure they can hear us,” thought Ukuk loud. “Climbing up is no solution either.”

“What to do?” asked Ngokush.

“I propose we follow the water downstream and see where that leads us. If that doesn’t work, we can always come back,” Ukuk suggested.

“OK, let’s do this and see how far we get,” agreed Cabanga. The three followed the small underground stream. The number of tunnels, holes, surprised Ukuk and vertical pipes there were.

“Cabanga, can you bring the light here?” She came. He looked up in one such pipe. Now he saw that the layer of dirt forming the roof of this shaft must be very thin. Their village was on unstable ground. He looked back and could see the pool they consider the village’s water source. How far was that? The others were looking too.

“That doesn’t look good,” Ngokush determined, “Not good at all.”

“Unknown perceived,” recalled Ukuk. “We did not know about this network of tunnels and shaft. The ground the village is built on is unstable.”

“Right, we have to move on and warn the tribe that our village is in danger,” confirmed Cabanga. The group continued along the river until it went under a rock. They could see a dancing light coming from under the rock.

“I think we can dive under the rock towards the light. That must be a place with sunlight,” said Cabanga.

“I will go first and see if you are right,” proposed Ngokush. Ukuk took a rope and handed it to his friend.

“Put that around your middle. If there is something wrong, pull three times quickly and we will pull you back in. If you reach the other side and it is the exit, pull three times slowly. We will follow you as soon as possible. OK?” Ukuk clarified.

“OK,” nodded Ngokush. He took off his shoes and stripped off as many clothes as possible. He went into the water. “Brr, cold.” Took a deep breath and disappeared under the rock. The waiting took forever.

“Do you feel something?” Cabanga asked.

“Nothing special,” he replied. “Ngokush is a good diver. He will make it,” he felt Cabanga was worried.

It took Ngokush more than a minute to reach the other side. With every stroke, the light became brighter. When he felt no more rock above his head, he swam upwards. He broke the surface and saw women washing clothes. He had surfaced in the washing pool. They were surprised to see him and refrained from running away. The women came closer and started asking where he was coming from and what he was doing.

“Wait, wait, I will answer all your questions, but first I have to tell my friends that I made it,” he told the excited women around him. He pulled three times on the rope and fixed his end to a tree. Now he had to wait.

Ukuk felt a long haul, followed by two more.

“Yes, he made it and it is an exit,” told Ukuk. “You go first, I’ll follow.”

By pulling the rope, they could cover the distance under the rock much quicker. Both surfaced shortly one after another. The news of their sudden appearance traveled quickly through the tribe. People interrupted their activities to descend to the pool. It was not every day this happened and they all wanted to witness the return of this small but special group of travelers.

“We have to tell the council that we had found the uvumbuz,” Cabanga told.

“And that the village is in danger,” continued Ngokush.

“Yes, we have to tell them as soon as possible,” confirmed Ukuk after he had checked that the root was still burning. They had left all their equipment behind except of course

the kettle. Ukuk had made sure that it was watertight before getting in the water and had opened it after he surfaced.

“You are lucky. The giants are in council. You can go now,” informed a bystander.

Trinity Overlooked

The headed to the meeting place. The three travelers in front followed by almost the whole tribe. When they arrived, the giants were discussing reorganizing the chairs. A change like that would certainly lead them to the discovery of the uvumbuz. It was a very heated discussion with proposals, arguments, and counter-arguments filling the space.

The traveling trio stood there watching the discussion. After a few moments, they went to the center and tried to tell that they had found it. First with a low voice, because small people do not talk during these umhlangans, than louder and louder until the three could not shout harder. No success. The giants did not even notice their presence.

They tried other approaches like standing on a chair, even kicking some legs… but all they received were some angry faces and a sign to get lost.

“This is important,” was the only words somebody said to them.

“But...”

“No buts!”

“Trinity overlooked,” sighed Ukuk the moment he decided they had failed. “Let’s get out of here. We will wait till things quiet down and try again later.”

“Good idea. We go back to the village and tell our stories with some real food and drinks,” agreed Ngokush. They walked off the perimeter of the meeting place.

“What do you think you three are going?” It was the voice of Kanipha. The council turned dead silent.

“Going back to the village. Nobody here is interested in what we have to say,” answered Ngokush annoyed by the sudden interest.

“No, the walkers want to hear what you have to tell,” Kanipha replied. “Tell them what you have found.”

“We have found the uvumbuz,” yelled Cabanga. A sound of unbelief raised from the giants. On the gesture of the chief, all went quite.

“And where is the thing you call the uvumbuz?” asked the chief.

“Here in the kettle. This burning root is the uvumbuz.” It was Ukuk.

“And why do you think you have found the uvumbuz?” questioned the chief.

“Because of the words of Kanipha,” he responded.

“Unearth fallen,” Cabanga gave the lead-in.

“We,” including the two others, “found the burning root, after a bolt of lightning smacked the old tree on the mountaintop in the direction Kanipha had send us.” The chief looked at his advisor who confirmed he did gave them a direction.

“Untouchable imagined,” continued Ngokush.

“We were attacked by ghost dogs. The uvumbuz inspired us to chase away their masters, the water people, by throwing burning stones at the location we imagined their boat would be,” Ukuk explained. A short discussion started about the existence of the water people. They were just stories, right? Ghost dogs did not exist? Of did they? The quarreling stopped when the chief raised his hand.

“Continue.”

“Uncertainty defied,” pronounced Cabanga. The two were taking turns to introduce the explanation by Ukuk as if they had agreed to do that to enhance the dramatics.

“We could free Cabanga because we acted swiftly although we were not certain it would work.”

“Unknown perceived.”

“We discovered that, unknown to you all; our village is on unstable ground. It could be swallowed by the earth anytime soon.” These words went through the council and the audience like a tsunami hitting land. The chief’s hands raised again.

“And the last one: Trinity overlooked.”

“You giants did not pay any attention while we, a group of three, tried our utmost best to get your attention. We were too small to be noticed,” concluded Ukuk. A whirlpool of emotions, reactions. As more people, big and small, got involved, the noise level increased.

“Quite!” The chief raised his voice and hand. “A nice story, but you have no proof. We just have to believe you, right?” The whole tribe was quite. A solar eclipse silence. Nature and people alike stopped breathing. Was this all fantasy? Cabanga and Ngokush stared at Ukuk as if to say “What now?”

“Follow me,” spoke Ukuk slapping the back of his friend, “I know how to prove it.” He walked to the water well. Looked down the hole as if he was searching for something. Some people put their head in the well too to see what he was looking for. He set his vision on an imaginary point and quickly stepped following his gaze. The crowd opened up to let the three pass followed by the chief, Kanipha and the giants.

Suddenly he stopped. People crushed against each other trying to avoid bumping into the leading group. He took two steps and with his finger marked a spot. Ngokush and Cabanga were beginning to understand what Ukuk had in mind.

“Chief, do you think this spot is safe to build a house?”

“Of course it is safe. Why would it not be?”

“Does somebody has an ax we may use?” Ukuk asked. Out of nowhere, somebody gavehim what he asked for. He handed over to Ngokush.

“Can you throw the ax as high as possible and make it land on that spot?” he asked Ngokush while pointing to the mark. Ngokush was now sure of the purpose of this request.

“Of course I can,” he replied confidently. The people made room because nobody wanted to be hit by accident.

“My dear friend, throw your ax.” With a flair for drama, why not giving a little show when your audience is glued to what you are going to do, Ngokush brought the ax back and high. With one smooth movement, swung it to the front and let it go at the apex of his swing. The ax climbed up the sky. Turned over when gravity had completely drained its upwards speed. It fell back to earth to crash on the spot. However, the moment it hit the ground a hole opened and the ax disappeared. A shock went through the tribe, but Ukuk had made his point.

“We didn’t know that,” spoke the chief. “I guess this proves your story. Where is the uvumbuz?”

“Here,” it was Cabanga who had thought to bring it with them. Kanipha walked to her and took the kettle.

“So, this is the uvumbuz?” he said with a clear voice.

“Yes, that is the flame that inspired us according to your words,” clarified Ukuk.

Kanipha took the burning root out of the kettle and held it up. People instinctively bowed slightly while releasing a quiet “ooh”. It was a magical moment.

He looked at the uvumbuz, at the people, at the chief and then at the three. He studied the uvumbuz and threw it on the ground. Took one step and killed the flame with his foot. The crowd froze in a petrified shock.

“What are you…” Ngokush was stopped mid-sentence by Kanipha’s hand sign.

“But …” tried Cabanga. Hand up.

“And your w…” Ukuk’s turn to get the hand.

“Yes, I know. Your travel matched my words. However, those words were not about your stories, but about the uvumbuz. About you,” he continued, “Yes, I have shown you the way, but would you have started the journey if I hadn’t given you some direction?”

“Uh, no,” Ukuk replied.

“That is why I pointed in the direction of the sunset,” Kanipha explained. “With ‘unearth fallen’ I meant that you had to forget how you normally do things and try something new, even if you do not understand in the beginning how things will evolve. Like you did with the tree, you just went for it.”

“Yes, I was not sure, but it made sense at that time,” said Ukuk.

“’Untouchable imagined’ refers to imagine what you cannot see and act on that idea. This creativity comes from your heart.” Kanipha was now standing behind Cabanga. He went to Ngokush.

“Then we have ‘Uncertainty defied’. Meaning that you do something even if you are not certain about the result. You try it anyhow even if you can fail. Doing that demands courage, guts.” He tapped on Ngokush’s belly.

“To get to ’unknown perceived’, you have to open your mind for things you do not know and use those new insights. You need logic and intuition for that.” In the meantime, he had walked towards Ukuk and pointed to his head.

“And as last ‘trinity overlooked’. You need all three: brain, guts, and heart. Or, an open mind; courage to act, and creativity to imagine. And we have it all here, we just have to use them. We don’t require some bizarre burning root or bizarre, unproductive advice from strangers; we have here all that we need. We are the uvumbuz!”

Epilogue

By now, you, as the reader, have guessed that this story is not just a story. It is an attempt to tell about how we could install the uvumbuz or Swahili for ‘innovation’, in our organization. Innovation is not hidden in some magic formula made up by a well-paid guru, but dormant in every organization. There are innovators in every organization, although I have to admit that in some there may be more than in others. We just need to create a culture that stimulates these individuals to grow.

For an organization to flourish, having innovators is not enough, you need people who plan, implement innovative ideas, take care of resources... with different skills. Innovation is a fire made from different kinds of wood, not the flame of one special root.

There are of course more reflections hidden in the text above. I challenge you to find them. Maybe you will find more than those I had intended to be in. Surprise me!

Virtuality: the Final Frontier?

Patrick Van Hoeserlande

Telling anyone that COVID19 has changed the way we work is like knocking on an open door. It is less obvious how much it has changed our lives and how much of that change will stick after this crisis has passed.

However, crisis is opportunity. Working at home is now common. Like everything, this comes with upsides and downsides. No time lost due to commuting or traffic jams, being master of your working hours, uninterrupted time for completing tasks… but it comes also with a grey zone between work and home, less informal contacts, every meeting has to be planned, decreasing creativity due to diminished interactions, the loss of social awareness during meetings… I do not know how long we, homo socialis, can survive with social distancing. Unless your EQ nears freezing point, you need an active social network to stay happy. However, this is not an article to contemplate on our current situation.

A few months ago, virtual meetings took a high flight. Not only did the number of meetings and specialized applications increase, we, the attendees, are getting better at it. Microphone, camera, lighting, and chat discipline has improved with quantum leaps. Unless you have awakened from summer hibernation, you know perfectly how to behave during a virtual meeting. If you do not, please check the internet for some tips and videos.

With the many conferences and courses the members of our HQ organize, some were confronted with the travel ban turning in-person conferences into pipe dreams overnight. For those who were hit by the slamming door, cancelling was the only option, but others had to change their approach and come up with a virtual version. These pioneers tried to accommodate the brick-and-mortar expectations of their audience with simple, virtual meeting platforms. Just-in-time delivery was often combined with discovering the limited possibilities of these platforms. The result may now look a bit amateurish, but they were leading the way and their audience, being in the same boat, was forgiving.

After the first wave – I do not refer to the epidemical waves – of rudimentary meetings, the second wave came in the form of webinars. These were better organized and better looking. Although the interaction with the audience did increase, it is still, in essence, a one-way communication event. The whole flow is directed from or to the ‘expert’ on the main screen. It is a serial happening focused on delivering the intended content.

There is a third wave coming. I have no complete idea of how this one will look, but the result will be webinars on steroids. The possibilities of the virtuality will be explored further and exploited better. I compare the evolution of the last months to the space race with the initial virtual meetings the first rocket test, small attempts to jump into space. With webinars, we started circling mother earth. With the third wave, it is time we go for the moon!

Not much unlike in-person conferences, webinars organizers are herding the attendees like sheep through a series of live briefs. Attendees do not have much choice but to sit in the dedicated conference room and listen to the speaker scheduled for that slot. Only at that moment, they can decide to listen or do something else. One advantage is that escaping a virtual room is much easier than trying to leave a crowded hall through the screeching backdoor.

A conference should aim at maximizing the outcomes for the attendees packaged in an overall theme. People should only invest time in what they assess as important or interesting for them, however, current technology does not allow for full individual control yet. As organizers, we still have to do some guiding. However, it will be more like herding cats. We must make every activity appealing to the audience and make these events available at a time convenient to them.

This means maximizing the use of pre-recorded talks and limiting the sequential screen time to the interactive moments that add value to the live moment. Only the moments when the audience can interact in real-time, like questions and answers sessions, panel discussion, and networking must be sequentially programmed, the rest is up to the individual discretion.

This change in approach has a far-reaching effect. Selling your conference is no longer the focus of your media campaign. Every single activity must now be ‘sold’ to the attendees. The question of how many attendees at the conference becomes a superfluous one. Even the length of the conference is uncertain. And there will certainly be effects that we did not foresee, yet.

As HQ SACT’s Concept Development and the Operational Experimentation branches, we are organizing our Concept Development & Experimentation (CD&E) conference (26-29 October) by exploiting and exploring the possibilities of the virtuality. I should underline ‘trying’ as we consider this as a kind of experimentation. We will try out things that will be successful and others that will not. Not failures as we will, without doubt, learn from all. Our audience will voluntarily accept being part of such an undertaking.

With the risk of our experiments not delivering what we want, you may wonder why I tell you this. Well, surfing on the third wave means we are exploring the unknown. Understanding the previous waves and the lessons learned might help us to see better

what lays ahead. We want to reach to all who want to share their experience. There are challenges out there that we do not know how to overcome. Of some, we are not even aware. We can use any help and input you offer us.

We have excellent speakers as astronauts ready to bridge the distance. However, to land on the moon, you need an organization inspired for space exploration. For virtual events, we need an HQ inspired to work together and take the next step. To boldly organize a conference that no one has done before.

Working at Home and the Creativity Depletion

Patrick Van Hoeserlande

Every cloud has a silver lining. At the beginning of the year, a small global invader forced us to reconsider our normal working pattern. Flipping on the computer at home became preferable to the commute to the workplace and spending time with colleagues. This shift of the normal working place from the HQ to home had, and has some unexpected advantages. There was an increase in road safety expressed in the number of traffic victims, simply because fewer people were driving on the highways. The sudden disappearance of the daily trek resulted in an extra hour, or more, of free time every day. 5 hours per week to do extra things, or just enjoy whatever you want. Months later, I wonder where those 60 daily minutes went.

However, the cloud is still there and a second front is in the making. COVID will stay with us for a while. The question is how we are going to live with it. Working at home gives you more flexibility to organize your work, however, the grey zone, the mental transition between work and home has broadened. While being off the road is safer with it comes the blurring of the distinction. Home is work, and work is home without a clear delineation between the two. A virtual meeting, a reply to an e-mail late in the evening is no longer an exception, rather the rule.

I have also observed a decrease in my creativity during these new-normal months. No new articles, no new stories, no ThinkBoxes… surely signs of fewer creative impulses firing off in my brain. There was enough news around to surf on, however, none of that inspired me to write. Well, at least, no articles, because I did keep for 6 months a journal on our quarantine adventures (these last three words are to be interpreted broadly). A daily story, yes, but no creative writing. A strange phenomenon. Might that be the unconscious reason why I jumped at the challenge of the virtual conference? Could my creativity find its origin at work? I wonder.

According to studies, scarcity makes for creativity. Scarcity refers to the basic economic problem, the gap between limited, or scarce, resources and theoretically limitless wants. Like every organization, we do not have limitless resources and thus, theoretically, we work in a scarce environment, right? However, this explanation does not satisfy me, I have a limited salary and working at home did not inspire me that much.

A resource is a source or supply as a basis for the production of a benefit that has some utility. The utility to satisfy a want. By defining a problem as a difference between a perceived and a desired situation, we understand that a resource is something you need to

bridge that difference or gap. As an HQ, we are bridging the gap between today and the shaped tomorrow, and we need resources for that.

To make the definition of a problem complete, we have to add two more elements. Firstly, the gap must be wide enough to be able to 'measure' it. We will not build a bridge to span a small pothole in the road. Lastly, the measurable gap must be big enough to annoy somebody.

If the person annoyed by the problem can access all the resources to solve it, you live in an ideal world. Or you are an excellent marketer. However, that is seldom the case. Normally, you miss some resources to complete the job according to your wishes. One of these rare resources is time. Problem-solving and solution implementation take time and time is something you normally do not have enough. A slow change over time or a snail's speed towards a solution leads to frustration.

Scarcity and frustrations increase negative emotions like depression and anxiety, which affect our decisions. These, in turn, can affect our thought processes and behaviours. People who are anxious or sad tend to be less patient; that is, they value smaller, short-term solutions. A phenomenon we all have experienced.

However, like scarcity, frustration can have a positive effect as it may lead to trying to find other ways to bridge the gap by creatively circumventing the obstacles, developing new approaches… anything to reduce the gap between is and perceived. As this must not be the real thing, the reduction can also be in the mind. Creatively thinking about an issue and solving it in your mind's eye may bring inner peace. This inner peace needs to be disturbed to ignite the neurons of the creative brain. Like a nuclear chain reaction that needs enough electrons to keep it going. When these are depleted, the reaction simple stops.

The best workplace for creative people may be an environment where things go wrong and people gets frustrated, and not a cosy place like home?

How to Implement a New Approach the Easy Way?

Patrick Van Hoeserlande

The hypothetical new approach

Let us suppose for the sake of readability of this article that there is a new approach with the name 'High Fidelity'. HiFi in short, as we love abbreviations in NATO.

Some companies claiming to be pioneers in the application of HiFi have made impressive strides forward in these difficult times and enjoyed a more than normal increase in shareholders' value. This is certainly something to copy in our aim for success. Although there are a lot of talks, plenty of articles on the internet, many opportunities for conferences on the topic, and tons of books on this new management approach, there is a public discussion about what it is. There is no one, unique passe-partout approach. However, everybody agrees that it is a change in enterprise culture supported by the use of special techniques.

You and some of your colleagues have attended a conference that touched on the new approach. Later, there was a guest speaker in the HQ giving a TED-level speech on HiFi. He presented a plan and led a workshop on the topic. His exposé confirmed that HiFi is the thing of the future. We should be its leading example in NATO.

You are thrilled when you are asked to implement HiFi in our HQ. After SACT and COS brief you on the task ahead, you step out of the meeting room and wonder how to implement this new, promising approach. You remember that you had taken a leaflet after an interesting lecture. You run through the books and papers on your desk in search of that golden ticket. There it is. The trifold reads:

The Easy Way

This implementation blueprint is based on years of experience with all kinds of changes. It is a sound change management approach that works with whatever type of change you want to implement. Change management theory does not care about the subject in need of change, only with the process of change. No matter if it is about implementing a culture of quality, innovation, warfighting… the steps to follow are always the same. Copy-replace (smartly) all by whatever you want to change.

There are several change models out there. Think about the Lewin's, the Kotter's, the ADKAR model, and the Nudge theory, just to name a few. These are complicated models to use, certainly, if you have no experience with them, and even then, success is not guaranteed. Anyhow, their success rate is not higher than the "easy way". The latter fits better the standard management style and is simple to execute.

The blueprint follows a quasi-standardized, straightforward plan for somebody tasked with implementing a new way of working with an underlining culture change assessed as very promising or even absolutely necessary by people high in the command chain.

What are its major steps?

Step one: Make an inventory of projects.

Make an inventory of all current projects you can put the label 'HiFi' on (or whatever name your new approach has). Make sure you are broad enough with your criteria or better do not have criteria. There is no agreed-on definition out there and you do not want to be bogged down in a discussion of what HiFi really means and what the difference is. The goal is to be as inclusive as possible.

Once staff sense that one must have that new label attached to a project to be visible, they will happily present their project in such a way that it will fit in the inventory. There may be some staff members unwilling to offer their project because they do not believe in the new approach. There are always people resisting change, even if it is for the better of the organization or themselves. Do not be shy to put also projects of resisting leaders in the inventory if that helps you.

Of course, once you have a bunch of projects collected, somebody will suggest streamlining your collection. It is logical to get rid of duplication whatever that might be, to make a master plan to match the priorities, to link the different projects to make sure that all objectives are supported… These tasks are hard to counter because they make perfect sense. You should be grateful for such a suggestion because it gives birth to a multitude of tasks. Enough to keep you and a whole team busy for months.

Do not worry, if nobody proposes the improvement of the inventory. You can suggest it yourself and still get a lot of support. People like to put their teeth into tasks they know, and applying procedures is an easy and well-known one.

Step two: Write a communication plan.

To be viewed as important, by that I mean your work, you have to tell how good you are to the rest of the world. Your new approach will change, no, is changing the way you do

business and everybody needs to know that. Your huge inventory of projects in line with the new approach is the perfect proof of that. Shine up the armour. Sell what you are doing by drafting a communication plan, make sure that the communication plan of your organization is aligned with it. Also, you must stress that people use your plan and that they preach the good news. This is a success and everybody has to spread the good news. There may be no doubt as to the effectiveness of the approach.

Step three: Send out the troops.

Make apostles that must preach the new religion. Send your troopers to every corner of the organization. Do not bother about telling them what the principles are, they will learn it by studying the projects. We are at the beginning of this approach and we all have to learn.

There will be techniques to be learned and courses to attend. Send people to these. You will not be able to send enough to these kinds of training opportunities, but that is not your fault. Keep pressing for more. Make sure you have a 'trooper' in every successful project.

Anyhow, you can tell that HiFi must be applied in every step of every process. Even more important, HiFi should be built into every process and procedure from the start. The earlier in the process it is considered, the better. Appoint somebody responsible for checking that it is done.

Super-relativity

By now, you should be convinced of the simplicity of this popular approach. It is really easy. Everybody can do it, or even come up with it without prior knowledge. It is loved by almost every would-be change manager. During my career, I have seen it put into action 5, 6 times.

And see it fail every time! Why?

Although it makes sense, the 'Easy Way' does not take into account that change is a human-centric or cultural approach. It is not a new production line you want to introduce. No, you want to change how people think, act. To change people, your movement needs energy. The bigger the change, the more energy you need. Loving the bare beauty of formulas, the energy you can harvest for a change project can be found by applying the law of super-relativity. That law is expressed as:

$$E = mc^3$$

With:

E = The energy of the change impulse. A good approach will lead to high energy available to overcome the 'resistance' against the change. This resistance is the sum of all forces pushing to return to the old way of doing things. The energy level is not constant. It varies during the period of change and is consumed by resistance. You need to pay close attention to it until the very end.

m = The mass of people willing to change. Ideally, every member of your organization wants the change, but that is rarely the case. Your mass needs not to be competent, yet. Their understanding of and desire to change is what is important here. Although the more people, the better, remember that the first atomic bomb weighting tons only transformed 8 grams into energy with great effect. A small, engaged, and successful group may cause a chain reaction.

c = The level of commitment. Pay close attention, I do not use the word 'involvement'. I talk about commitment, the degree that expresses the stakes that people have in the change. Real commitment comes from people that (implicitly) follow the rule: succeed or out. Being a 'homo constitution', the effect of a committed person high in the hierarchy is bigger than that of a committed staff officer. Commitment goes much farther than telling somebody else to change. Although a committed commander can tip the scale, there is an important lesson to be learned from the toilet paper crisis a few months ago. A seamlessly unimportant commodity can have a huge effect. A few committed workers can be powerful change agents too.

c = The perceived level of the crisis or competition. A high level of crisis, with individual survival at the extreme end of the scale, will free a high level of energy if there is a plausible solution offered. Most people prefer to fight over flight if they have a chance, however slim, of success. Standing on a burning platform, most will jump quicker in the water if they see a nice beach within reach. Be aware that some only need to be dreaming of the beach to jump. The fire, the crisis, must not be real, just perceived. Although an imaginary one only has a temporary value.

c = The level of competence in the new approach. You need people who know how to swim. In the beginning, you might need to get that expertise from outside – you might be surprised by the available in-house expertise - unless the crisis is not a clear and present danger. However, external expertise needs to be translated into your organization. There is only one option for that translation and that is doing it. Do not look for low-hanging fruits. These are long gone. Intelligent people spot these quick wins easily and do not consider these as convincing proof. Pick a project that is assessed as moderately difficult with an output in the short term. Do not overload it with exceptional resources and focus on the new approach. Learn from it!

As with all multiplications, the highest result is reached by finding a good balance. If one factor is going towards zero, the energy for your change project will be drained. For example, without commitment, things will stay the same. Take care that your change activities are divers to all factors. Sometimes you might need to sacrifice one high scoring factor in favour of a very low one.

Why the 'Easy Way' goes against super-relativity?

Step one: Make an inventory of projects.

By collecting current projects, you start diluting the new approach. If most, current projects are HiFi, what is the new thing? Why do we need to change if old projects are fine? Where is the fire? Do we need a beach? If their project is HiFi, why not mine?

Committed people trying to bring change are prevented from using the new skills because others do not feel the need for change. Your change agents are becoming isolated.

An inventory does increase, to put it mildly, neither the number of people willing to change, nor the collective competence, the crisis, or the commitment. At best, it keeps the energy level at a status quo, but most of the time the energy flows away like a leaking, peeping balloon.

Change is much more than a collection of HiFi labelled projects. As far as I know, an inventory has never produced an output, all that work is just overhead.

Step two: Write a communication plan.

A plan to communicate how good you apply the new approach has a similar effect on your available energy. If you are already that good, why changing? With a good plan, you will fool your external stakeholders for a while, but internally, your staff knows. They may talk the talk by copying the official communication; they will not walk the talk. HiFi is great, but do not ask me to implement it. Show! Implementation?

What must be communicated and demonstrated, certainly internally, is the crisis and the commitment of the top.

Step three: Send out the troops.

People without a good understanding of the new approach will be contra-productive to the effort. Being unable to explain the new approach and only equipped with 'old' tools, they will quickly be recognized for what they are: extra overhead. They can even express their concerns about the new approach, certainly, if they are 'selected'.

A motivated trooper may be worse than an uninterested one. He or she may be eager to help the project, but not knowing what to do differently, only confirming that it is business as usual and that labelling a project HiFi gives you access to additional resources.

Does that mean that only experts should be sent out? No. Motivated people with a good understanding of the new approach and limited knowledge of the tools can make a difference. A project team will understand and enjoy being part of trying out the new approach. Most people are eager to learn and appreciate the opportunity to improve a new approach. If the trooper communicates that the objective of his/her participation is to learn how HiFi can be put into practice, team members will help him/her out.

Epilogue

So, HiFi starts with all the signs of previously failed approaches. The staff will keep on running through their daily routine, keeping up the appearance till the high bosses are gone and the new group comes with another approach.

What should have been a better approach?

About Trust (in Autonomous Systems)

Patrick Van Hoeserlande

What if to need to find a lost person in a defined area, you have access to three different systems: a person, a dog, and a machine (in this article, I use the word machine for an autonomous system that can perform a complicated task). Who or what would you trust to tell you when they find that lost person? Would you trust a person, a dog, a machine? After one, 100, 1000 successful training sessions? A search and rescue certified person, dog, or machine? Which system would you trust if it came back empty-handed 'telling' you that there is no lost person in the area? What system would you trust knowing that the dog has a superior smell and the machine multiple sensors? Which system would you engage when that lost person is a family member?

These hard to answer questions show trust is a complex concept with hard and soft components. Although advantageous, hard data alone will not be enough to convince most humans. You earn trust; most of the time through long relationships wherein somebody or something proves to deliver what is expected. However, sometimes a single act or word of mouth may be sufficient to earn somebody's trust.

Although there may be circumstances wherein people, leaders or operators, may gain trust in autonomous systems through quick fixes, these instances will be rather the exceptions and certainly not an element for planning. In the case of autonomous systems operating out of the reach of the operators (examples underwater drones, over-the-horizon systems), the trust challenge is even greater. With positive experiences with autonomous systems as the best road towards trust, we can use a wide spectre of possibilities to bridge the gap between what these systems can and what they are allowed to do.

Before diving into these possibilities, we need to point out that the interaction between autonomous systems and human operators can be based on under- and over-reliance (resulting from under- or overtrust). Under-reliance means that the human does not take full advantage of the machine's capabilities possibly leading to safety issues, as humans might become overloaded causing erroneous behaviour. An extreme form of under-reliance is a situation in which the user does not accept the system at all. Overreliance means that the human allows the system to act autonomously on a task, although the system is not capable of doing that task. Overtrust is a dangerous condition to be avoided for critical systems.

One thing is certain, without extra efforts, autonomous systems will very slowly gain our trust leaving the opportunity open to more risk-taking adversaries to employ them in ways we do not feel comfortable. ISIS has famously deployed armed drones in many

of its attacks and Russian soldiers have deployed ground robots to Syria. There's no indication that any of these machines were fully autonomous, but the manner in which their operators used them suggests that was more of a technical - rather than ethical – barrier.[1] A low percentage of chance to finish the job may be made good by employing a high quantity of systems and still create an effect at a relatively low cost. How must trust do you need to have in one system if the mission success rate can be made good by quantity. Joseph Stalin's citation that quantity has a quality all its own stays valid with modern technology.

DESIGN FEATURES

Although current technological developments look very promising in providing a high degree of autonomy, trust may be maintained through the requirement for the so-called "human in/on the loop" (e.g., weapon release criteria, legal obligations related to the safety of navigation). Even if this might limit the autonomy of the system at the start, this requirement could be relaxed as operators and leaders learn to trust the decisions of the system. Humans are bad at detecting rare faults, meaning that a high-quality autonomous decision-making process endangers the effectiveness of the human-in-the-loop setup.

Sometimes 'halo' and 'horn' effects bias our judgements about people and their actions. These effects have also their impact on human-machine trust. We could exploit these effects by making sure that autonomous systems are good-looking.

Another effect that supports increasing trust in autonomy is anthropomorphization. By giving names, we consider non-human subject looks like it has a face, we would like to be friends with it, or we cannot explain its unpredictable behaviour. Whatever the reason, it creates a bond and with it comes a level of trust. To exploit this effect, we should stimulate operators to give their systems names.

Similarly, the ability of a machine to communicate and interact with operators in a human-like way by 'facial' expressions and voice plays on the soft factor to augment trust.

EDUCATION AND TRAINING FOR OPERATORS AND LEADERS

It is important to educate operators and leaders in the interaction with new technology and to enhance the experience through training to build the right level of human trust in employed systems.

The principle "Train as you fight – Fight as you train" should be incorporated as much as possible. Increased processing capacity, alongside the adoption of open, networked, architectures will enable the use of simulators for the vast majority of training needs,

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[1] Soldiers Don't Trust Robot Battle Buddies. Can Virtual Training Fix That? - Defense One, 02 Dec 20.

increasing frequency and efficiency. However, for as long as operators need to operate close to in-theatre autonomous systems, there will still be a need to conduct live training to acclimatise personnel. There will also be an enduring need to validate simulator modelling with live training and operational assessments.

In his paper "This Is My Robot. There Are Many Like It But This One Is Mine," Major Yurkovich argues that "inability to (a) understand artificial intelligence (AI) and (b) train daily, will compound to create an atmosphere of mistrust in valuable systems that could otherwise improve the lethality of Infantry Marines." The key to building that trust might be allowing operators to help train the AI-powered machines that serve beside them, as opposed to just handing a soldier, Marine, or airmen a robot and sending the pair off to war together. "Teaching and developing AI agents within a simulated environment by the end user indicate there is the potential for better trust in the AI agent by the end-user when placed as a teammate" within a human-machine team, Yurkovich wrote. This is an approach called interactive machine learning (see also my story 'BLEU BREACH').

M&S WITH BOUNDARY EXPERIMENTS

Countless simulations supported by experimentations and real-life demonstrations of its predicted behaviour in extreme situations of the operational envelope can proof its trustworthiness. The extremer and less certain these situations are, the higher the impact of such demonstrations.

PEER AND THIRD-PARTY VALIDATION

Verification and validation of the individual systems and the collective must not be limited to the initial commissioning but regularly executed. NATO-wide information sharing will offer great benefits with greater access to peer validation and internal data testing. Another option is to create a NATO body for validating autonomous systems.

HUMAN-MACHINE TEAMING

Although very promising, machines are not a panacea, certainly not soon, and complementary approaches are needed. The employment of autonomous systems will be directed on the dirty, dull, dangerous, and difficult (4 Ds), while trust and understanding develop.

Humans are not well suited for these 4Ds jobs, but are more flexible and dexterous, can think beyond algorithms to come up with unique ways of solving problems, are empathetic, have emotional intelligence and more. Whatever the improvements in AI, autonomous systems cannot think beyond algorithms to solve problems creatively, demonstrate empathy and emotion, or invent. Humans are needed to program, repair and teach/train autonomous systems.

Separately, autonomous systems and humans cannot reach beyond their inherent limitations. Together, in concert, machines and humans will improve capabilities beyond the simple sum of the components.

MACHINE FOLLOWING HUMAN AND THE OTHER WAY

A specific type of human-machine teaming is the redundant tasking whereby one does the same as the other in serial. Trust increases as the gap between the measured performance of autonomous and human-controlled systems shrinks or tilts in favour of the first. As with most other approaches, this takes time and may even lead in the beginning to longer operations, but the effect of an autonomous system find for example a naval mine after a manned system cleared the field will be tremendous and worth the investment, even when that was during training or an exercise.

HUMAN AGAINST MACHINE

Taking the former approach a bit further brings us to competitions of human against machines. Comparing the performances of a task that can be repeated by different teams demonstrates the value of autonomous systems. Having a set of tasks to perform has the additional value of showing which system is better in which scenario.

MISSION IMPOSSIBLE

When operators have great faith in the ability of their system, they may be willing to try a mission deemed nearly impossible. A task that others have tried and failed may convince sceptical of the trustworthiness of the machine. These may come in the form of real tasks or as a challenge. A good challenge is a task considered only possible in a not-so-near future.

TRUST BY USE AND IMPROVE

The last possibility is to earn trust by using the systems as early as possible. Every group has early adopters willing to put effort into improving systems that are not fully mature. Through their willingness to test the systems in different situations and giving feedback on possible improvement, the system will mature faster than through conventional validations procedures. This group of operators will also have a much better understanding of the capabilities of the machine. We should involve real operators as early as possible in the spiral development of autonomous systems.

THE REAL CHALLENGE: MACHINE LEARNING

Current machines are not learning on the job, but in preparation of it, the machine, unlike its human counterpart, that leaves is the same one that returns (unless somebody has tampered with it). Their neural network is frozen at the start of the mission and not updated with experience.

The trust question will become more complicated when machines will learn while on a mission from its own experience or even from inter-machine learning. This could be another step in autonomy with incredible benefits but will pose a huge challenge to our relationship with machines.

Looking at the numerous possibilities to enhance trust in autonomous systems, we need to research to determine what approach is best for what combination of scenario, system, operator, and leadership. There is no time to waste. The sooner we start using these systems, even not fully mature, the better.

Note: This article is an elaborated version of my contribution to the November 2020 Innovation Challenge 'Trust in Autonomous Systems'.

Spiralling Towards an Elusive Level of Ambition

Patrick Van Hoeserlande

Some articles need time. This is such an article. I would like to tell you that it needed time to mature, but that would be twisting the truth's arm. It probably developed during the years, but that was certainly not intentional. One of the reasons is that the topic is rather difficult to encompass, certainly if one wants to write about it. By the time I felt confident enough to put the thoughts, and I wrote purposefully not 'my', on paper, it felt like evolution had made those obsolete. However, recent developments – the trend towards using several smaller unmanned systems - make me believe that the underpinning ideas may still have value. I let you, as my reader, be the judge of that.

The trade-off between quality and quantity

Acquiring a capability is not only a question about quality but also about quantity. It is more about striking the right balance between these two opposing elements. Quality is subjective, whereas quantity is not. A capability might be assessed as high quality by somebody, whereas another person might think that it is of lower quality. However, it is harder to dispute the number of weapon platforms, although some will want to discuss the number of useable systems (but that is just adding a qualitative element to it). When we count five systems, then there are five. One cannot honestly claim that there are four or six.

The water gets a bit murky because "quantity has a quality all its own"[1]. This quote should not be interpreted in its original meaning from the paradox of the heap of Eubulides whereby a quantitative change in the number of grains of sand leads to a qualitative change in being a heap or not. It should be considered in the sense that a high quantity of technical "simple" systems (example: drones) become a quantitative complex system by applying swarm logarithms (does Eubulides get a say in this?). Highly complex, expensive systems overloaded by waves of simple, cheap objects.

In this article, I will use the quality-quantity interaction in the sense that there is an 'ideal' trade-off between the two. On the one side, there is no security in having only one invincible, high-performance platform. On the other side, being the proud possessor of a huge heap of scrap is not assuring either. Somewhere out there, there is

[1] I will not go into the discussion of who came up with this phrase, nor where it came from.

an optimum equilibrium between the two, although I suspect that there will be multiple, optimal combinations. There is not only one.

To make things even more complex, acquiring capabilities is a dynamic given. It takes a long time to go from the initial concept to full implementation. In that period the environment and possibilities might change that much that (part of) the new capability is already outdated. As Donald Rumsfeld has said: "You go to war with the army you have, not the army you might want or wish to have at a later time." You aim at having on the moment of truth the better capabilities in enough quantity. At that moment and not earlier of in some near future.

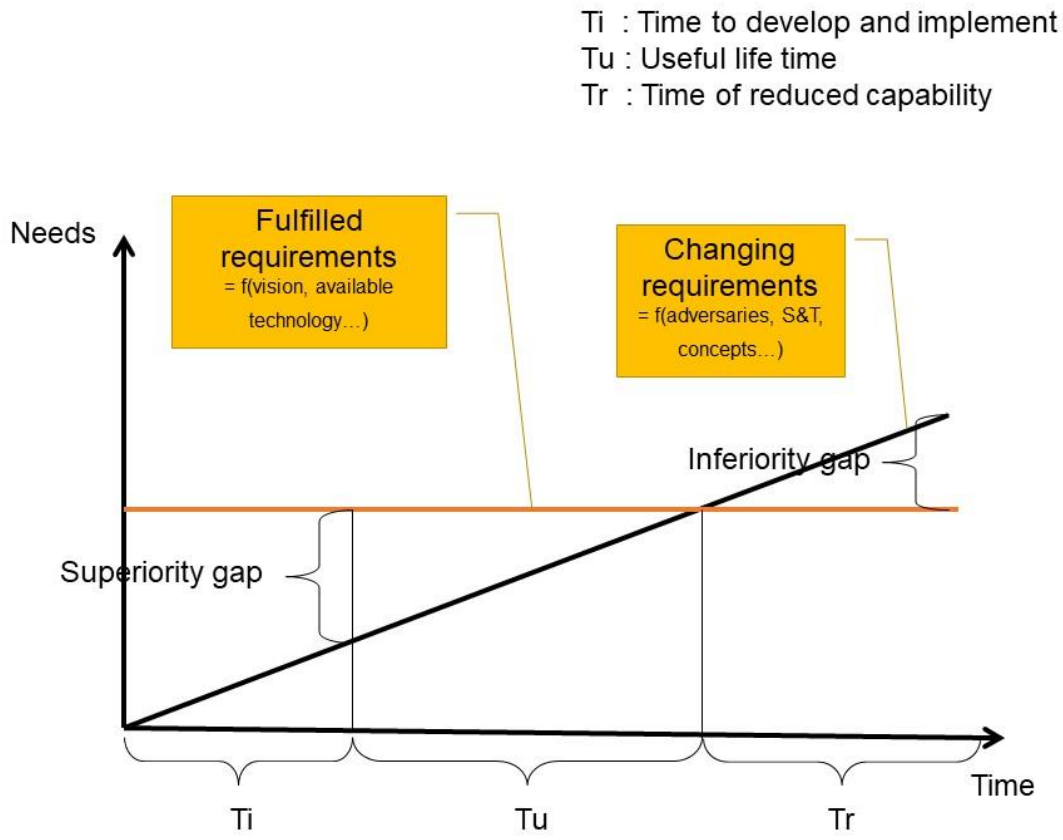

Figure 1: A simplification of the capability life in a changing environment.

The goal of capability development and transformation is to deliver affordable, economical capabilities that meet evolving requirements within the appropriate timeframe. In a stable environment, it is possible to spend a lot of time to develop and implement the capabilities (Ti) that will satisfy the expectations for a long time (Tu + Tr). It is also possible to take full advantage of the economies of scale by purchasing large quantities of similar equipment.

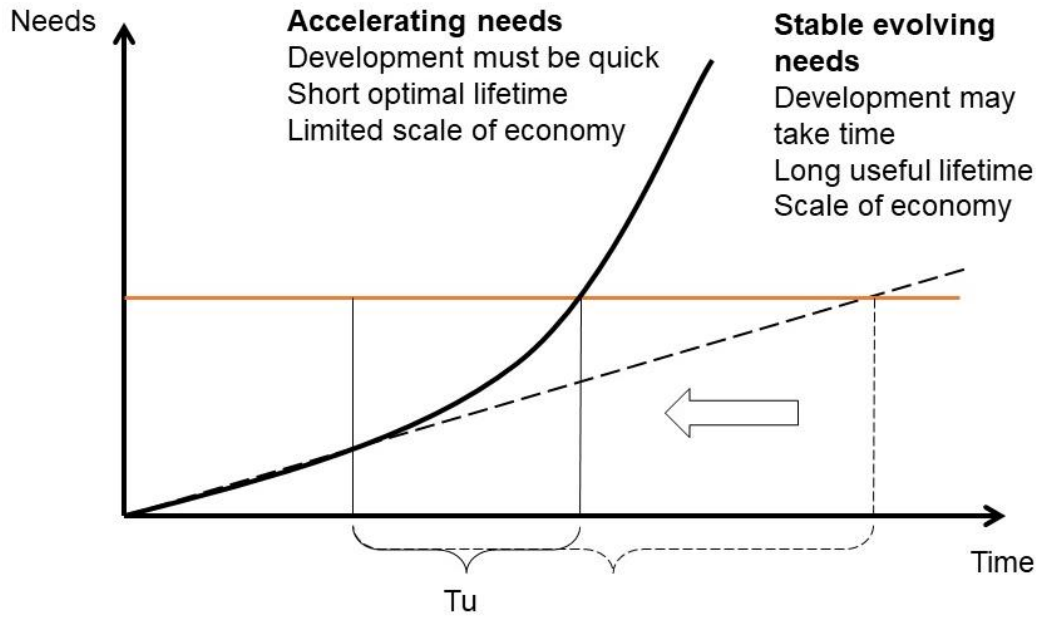

Figure 2: A simplification of the capability life in an accelerating environment.

However, in our current times rapidly evolving environment with an ever-increasing speed of change, this approach very quickly results in out-dated capacities too late available. Another approach is required.

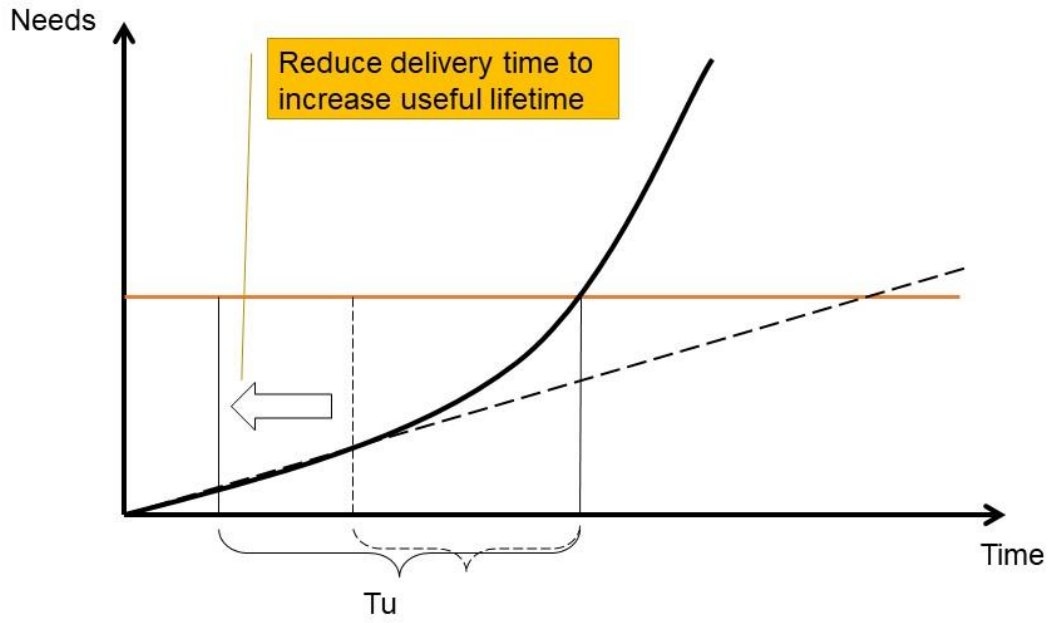

Figure 3: A reduction of the delivery time (Ti) leads to a longer useful lifetime (Tu).

Reducing the development and implementation time (Ti) will directly lead to a longer useful lifetime wherein the capability is superior. Therefore, transformation and agile innovation are important tools. One way to do achieve this is to reduce the requirements for the capability. This might reduce the marginal gain, but it is an important step towards a broader answer to our question on how to approach the problem of delivering the right balance, the trade-off between quantity and quality. How to deliver capabilities to meet the level of ambition?

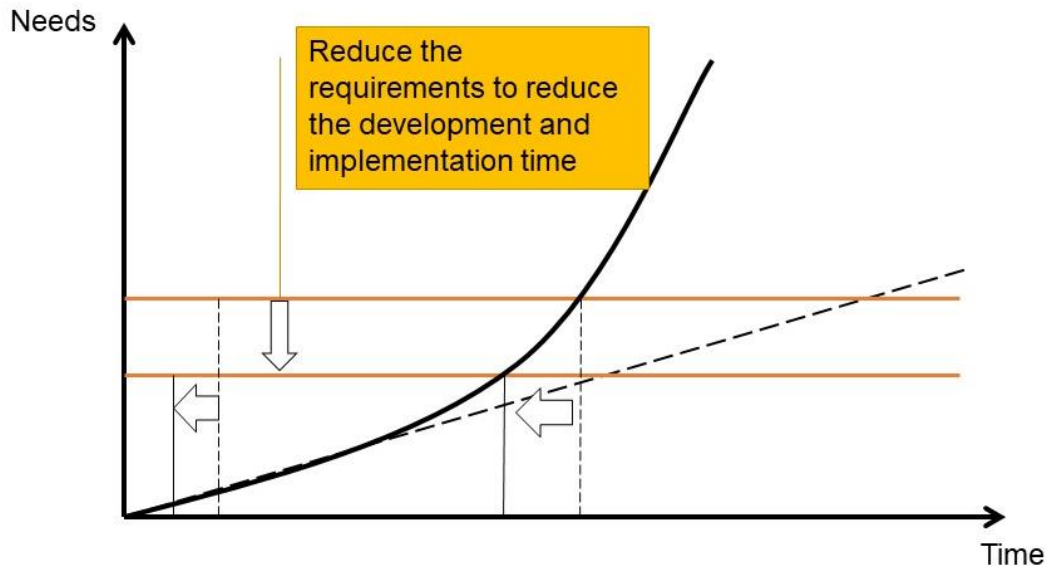

Figure 4: A reduction of the requirements leads to a longer useful lifetime (Tu).

But before we can do that, we need to discuss spiral development.

Spiral Development

Spiral development is "a process for developing and transformation of capabilities within which the end-state requirements are not known at program initiation but are refined through continuous user feedback, experimentation, and risk management so that each increment provides the user the best possible capability".

A characteristic of spiral development is that the users are constantly involved from the start of the process and are thus co-developers. Resources are made available to conduct early operational experiments. This makes it possible to test very quickly and at low cost whether the concept has a chance of satisfying effectively. This results in "greater space to learn" and "less impact of mistakes". After each iteration, the concept and requirements are revised in the light of lessons learned and changing circumstances. The goal of "spiral development" is to obtain a product that evolves with the needs of the end-user.

Although spiral development 'pur sang' aims at delivering a final capability, we can easily adapt it to deliver intentionally an ever-evolving stream of capability packages. The capability to match the LoA needs to be divided into layers. The number of layers is a function of several variables like the size of the main platform, the speed of technological evolution, the maturity of the capability, the number of systems… If we elaborate on Figure 4 by adding our adapted spiral development approach, we understand why reducing the requirements may prove opportune, even if that means a reduced marginal gain of Tu.

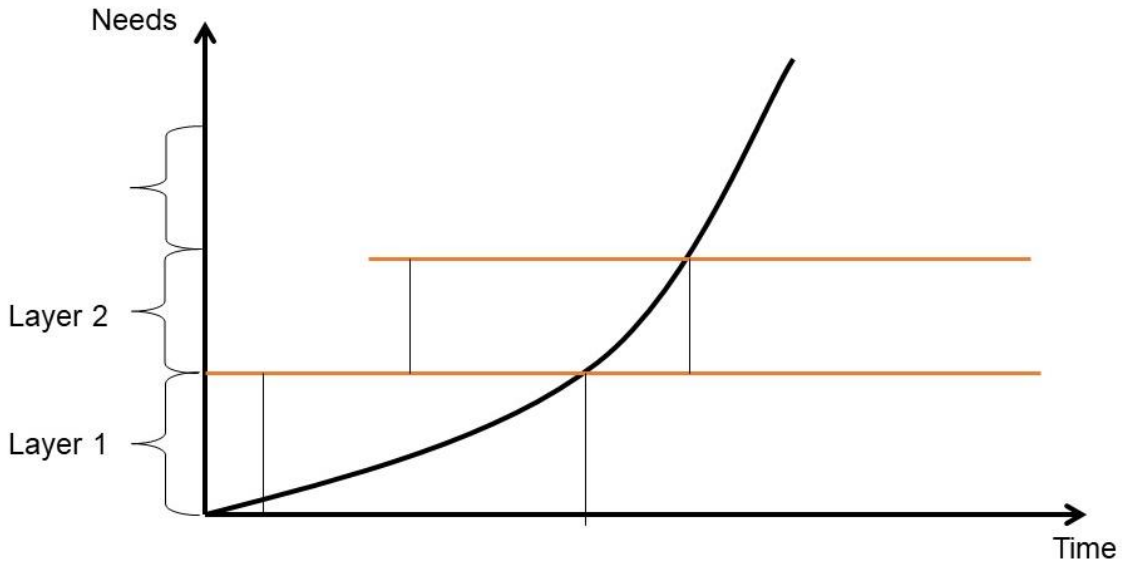

Figure 5: The application of spiral development on the capability life cycle.

To explain the approach a bit more in detail, let us use three layers. We define these layers related to the LoA by the minimum quantity of capabilities need to satisfy combinations of scenarios with a similar likelihood:

- 1st layer: routine (most likely);
- 2nd layer: less likely;
- 3rd layer: unlikely.

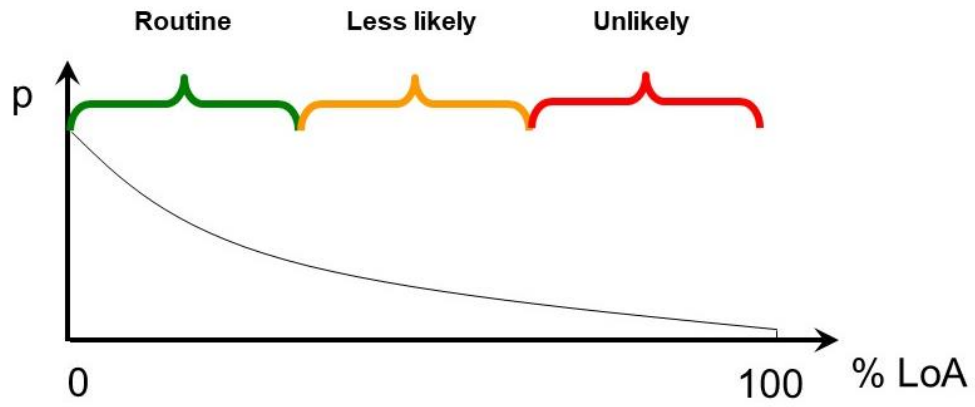

Figure 6: Layers as a function of the likelihood of executing parts of the LoA.

While we spiral towards the evolving requirements, we add the approach of layered acquisition. In doing so, we provide the latest spiral outcome, i.e., the most modern capability at high readiness to the most likely combination of scenarios. We foresee the 'older' core capability for the less likely layer.

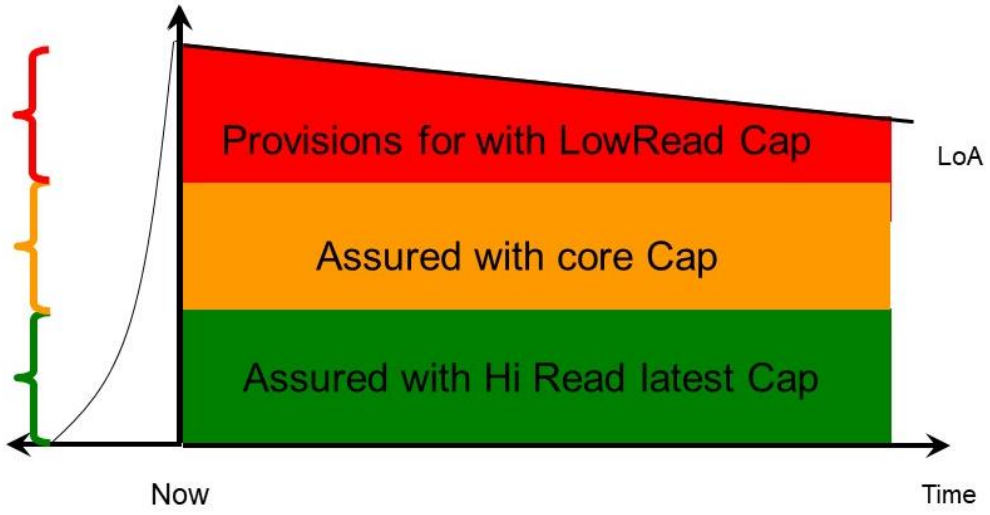

Figure 7: Layered acquisition linked to the likelihood of executing parts of the LoA.

Combining Figure 4 and Figure 7, results in a chessboard-like approach to capability life cycle management. In our case, the initial first layer capabilities move after the introduction of a next spiral capability to the second layer, the second spiral to the third layer, the third is phased out.

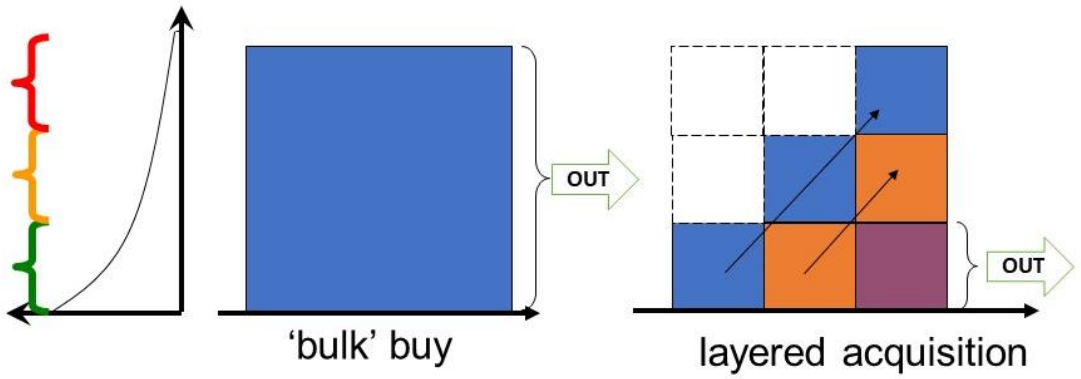

Figure 8: The combination of layered acquisition and spiral development compared to a bulk approach.

This can be done in several ways depending on your orientation towards material or capability. Or maybe you rotate the layers so that you send the latest capabilities to current operations? Just make sure that you send capabilities with every DOTMLPFI equally implemented and not just new equipment.

An important nuance is that layer 2 capabilities do not mean that these are less effective. Having the latest equipment, newest training methods… sometimes do not compete against a well-oiled interaction of 'older' line of development pushing the overall envelope beyond the initial boundaries.

The final step to complete our approach is to add a changing LoA – here illustrated by a declining LoA – and ever shorter development and implementation cycles. This is illustrated in Figure 9.

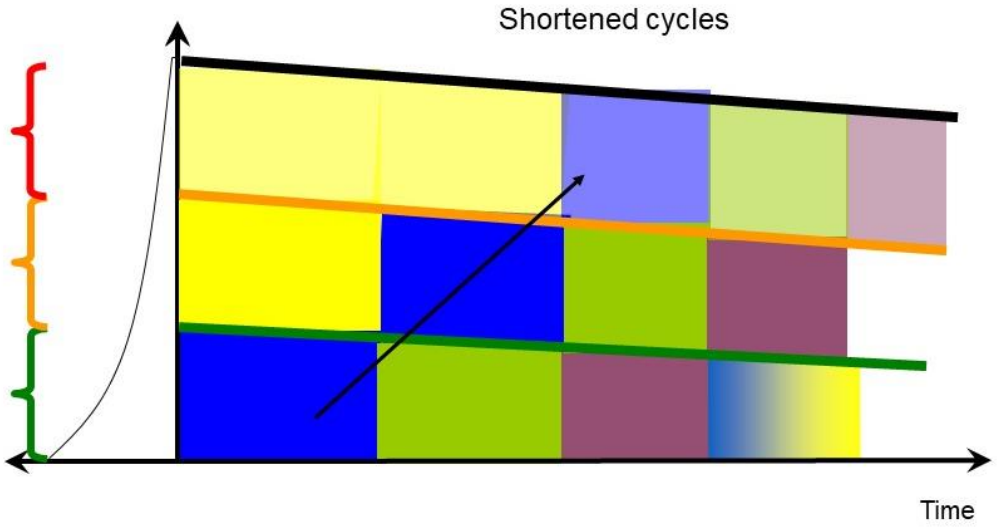

Figure 9: The complete approach to balance quantity with quality.

Why Bother About the Future When We Know We Will Be Wrong?

Patrick Van Hoeserlande

Sometimes while standing in front of a classroom eager to learn everything about concept development I get the question why we invest in developing concepts as just one of the possible ways to solve a problem in the future. This means that there may be other, better solutions, implicitly accepting that the approved concept may be wrong. Before answering, I reply that I am sure that whatever concept we develop it might be wrong, at least it will not be completely right. A varying part of it will completely miss its goal. Only historical concepts hold the magic to be right and we are not in the business of that kind of work.

Why? Well, it is inherently impossible to predict the future with accuracy. However, we still try to do it in one way or another even when the great majority who attempts it tend to get it wrong. David Bouchier griped that “financial advisers, think tanks, opinion polls, market researchers, the Federal Reserve and the CIA all specialize in getting the future completely wrong at enormous cost.” We might add HQ SACT to that list.

Here we are in 2021. On the cutting edge of genetically personalized medicine, autonomous cars that can fly, artificial meat made in the lab, artificial superintelligence improving our lives, and... Wait a minute. Have not all those things been predicted for years? Are they not supposed to be here already? Where are they?
Well, yeah. Which begs two questions. Why are they not here? And, why do we keep trying to predict the future when we are so bad at it?

Even some genuine prophets felt they might be better off with a “real” job. “How did I ever get into the predicting business?” asked Isaac Asimov. He was convinced that “predicting the future is a hopeless, thankless task, with ridicule to begin with and, all too often, scorn to end with.”

So why do we bother about the future when we know we will be wrong?

Lost in the woods

Suppose you wake up in the middle of a forest with no idea how you got there and where you are. Truly lost in mind and space. You first wonder if this is a dream. Or, have you lost your mind? After a while, you calm down and assess the situation.

You have many options, but the first thing you have to decide is if you want to survive. If yes, than there only one option and that is to have a plan. Working as a K9 SAR volunteer, I know that doing nothing or giving up is the biggest killer when being lost.

Considering your predicament, you are not sure if somebody will miss you. Even if somebody would report your disappearance to the authorities, where would they look for you? You are here without the slightest idea where 'here' is. How would somebody else know where you could be? You could be abducted by some aliens and be on another planet. So, scrap one of the smartest options when lost and missed with a good idea where to look for you, i.e. staying put and arranging for shelter and water.

Besides playing a local Robinson Crusoe and live long on your undiscovered island in the woods, your only chance of survival is to walk in one direction making sure they can trace you. Which direction? Preferably towards a highly visible landmark and if you do not see any, the direction that is easiest to keep going. Your decision to start moving in a determined direction is a plan. Is it the best plan? Most probably not, but it is much better than no plan. Why?

During the First World War, a small group of Hungarian troops was camped in the Alps. Their commander, a young lieutenant, decided to send out a small group of men on a scouting mission. Shortly after the scouting group left it began to snow, and it snowed steadily for two days. The scouting squad did not return, and the young officer, something of an intellectual and an idealist, suffered a paroxysm of guilt over having sent his men to their death. In his torment, he questioned not only his decision to send out the scouting mission, but also the war itself and his own role in it.

Suddenly, unexpectedly, on the third day the long-overdue scouting squad returned. There was great joy in the camp and the young commander questioned his men eagerly. "Where were you?" he asked. "How did you survive, how did you find your way back?" The sergeant who had led the scouts replied, "We were lost in the snow and we had given up hope, had resigned ourselves to die. Then one of the men found a map in his pocket. With its help, we knew we could find our way back. We made camp, waited for the snow to stop, and then as soon as we could travel we returned here." The young commander asked to see this wonderful map. It was a map not of the Alps but of the Pyrenees!

Some writers have expanded the moral of this story, but the sole role of the map was to calm the soldiers as they could find their way back to camp on their own.

The mere existence of a plan improves your survivability by enhancing your comfort and hence safeguarding your reasoning skills.

But why are we so wrong about the future?

Before we further consider why we need to predict the future, let us explore the reasons why we will be (mostly) wrong about it.

Psychology research suggests that the more desirable a future event is, the more likely people think it is. This so-called unrealistic optimism makes you think that good things are more likely to happen to you than to other people, whereas bad things are less likely. People predict that they are less likely than others to experience illness, injury, divorce, death, and other adverse events - even when they are exposed to the same risk factors. This is also true for our predictions about groups and organizations. Are we not all thinking that NATO will stay forever and that we will prevail over every adversary?

Sometimes predictions are influenced more subliminally. You may unwittingly only gather and synthesize facts that support the outcome you want. Anxiety is such a devious influencer, but also strongly held beliefs. The self-interest influencing people's predictions is simply their desire to be right. People predict outcomes that will affirm their beliefs about the world: that democracy is winning, that good will conquer, that we will find the right technologic solution for world threating problems... People committed to something have a stake in the outcome, and thus they assess a higher success rate. Strongly held beliefs become self-interested beliefs. In other words, to get better at predicting you need to ban your prejudices from their probability equations. That is why we need to adhere to methods and use heterogeneous teams.

Since the Renaissance, science and technology have dominated our visions of tomorrow, our common dream to "go where no-one has been gone before". However, the actual pace of technology has usually surpassed that expected by those peering in to the future, the quantum leaps made possible by a new discovery being impossible to anticipate. In 1898, H.G. Wells nailed a number of technologies like radio, movies, and air conditioning, which were to be but underestimated how quickly they would appear, about 40 years instead of his projected 200. Wells was off by almost a century when it came to man's landing on the moon, analogous perhaps to how we will misread the rapid evolution of current technology.

Even more than overshooting technological achievements, however, has been the failures to anticipate major social change, or in our case, the military use of those

technologies. The bias towards predicting technological versus capability progress has been and continues to be an Achilles heel. The next technological wave is easier to see coming than the disruptive tsunami of its employment. It is ideas and concepts, not technology, that have stirred the biggest changes in human and military history. Not technology is disruptive; its employment causes the disruptive effect on the equilibrium. Agree, some new and futuristic technologies lend them better or easier to disruptive applications, but old tech can as powerful in a surprising manner.

So why doing it?

Back to being lost in the forest. Your plan of hiking in one direction not only gives you peace of mind; it also helps you to recognize an opportunity when you see one. Following Lewis Caroll advice that only when you know where you are heading, you will recognize the road leading to your destination. You will also be able to recognize a path that does not lead to your destination. At that point, you can decide to change your objective and exploit the new opportunity, or just stick to your plan because it is still better. That flexibility of thinking is, according to Albert Einstein, the key to solve problems created by our current thinking.

Now, I will take this mind exercise a step further by ‘teleporting’ you to an enchanted forest. Here, your thoughts can influence the environment, the future things you will encounter. A few instances after you imagine a road; you could discover indications that there might be one. Walking further, you see a small path broadening ahead leading you in the direction of your objective. A step too far?

Earl Nightingale told us “everything begins with an idea.” New ideas can only find their origin in new thinking. First, we imagine our future world and then we see the signs and make it happen. In short, we predict the future because it affects what we do in the present, and what we do in the present shapes that future. We recognize patterns because we already saw them with our mind’s eye.

We desperately need predictions about the future, even wrong ones, to help us narrow the infinity of plausible futures down to a manageable handful one. These ideas or concepts of possible futures are our advance scouts infiltrating the undiscovered country ahead to come back with reconnaissance maps of possible worlds to come. Without those, we will be surprised by every event unable to recognize new threats or opportunities.

The study of the psychology of risk perception has found that one of the most powerful influences on fear is uncertainty. The less we know, the more threatened we feel, because lack of knowledge means we don't know what we need to know to protect ourselves... which equates to a lack control over health and safety, life and death.

Knowledge, even if it is incomplete or not completely right, is power over how things turn out. Power, a feeling of control (even if it is false) is reassuring. Without knowledge, and some sense of control, we are more afraid. The best way to prevent uncertainty is to look down the road and try to see what lies around the next curve(s), in more than one way.

Even when hindsight lets us look back and see how blind and optimistic our foresight usually is, the reassuring nature, the possibility to exploit new opportunities, and the power to change what is ahead of us makes it a worthwhile exercise.

The future is ours to think.

Pepper Jack

Patrick Van Hoeserlande

This is for sure a ThinkBox preceded by a long - the longest? - time tinkering with the title. It started with a simple and straightforward attempt: “Five zero”. Yes, this is the 50th article in the series and the last one. I find 50 a nice number to end a series. Just long enough to stretch my thinking, but not too long as to get boring for you, the reader. Therefore, this article will be my final ThinkBox and 50 is a kind of natural title for this edition.

An easy title deprived of all creativity. I could not do that. It is not a worthy ending of almost 8 years of poking for ideas and challenging questions. I needed to end with a better title covering at least the content of this article, if not the whole series. My search for a good title changed to one for inspiring and thought-provoking ultimate content.

It would be nice to come up with some kind of conclusion from the 49 previous articles. Great authors like J.K. Rowling – I must admit I did not read all the Harry Potter books, only saw the movies – keep you books long on your toes and introduce seemingly unrelated facts in every edition until you see it all coming together in the last and final book of the series. Do these authors have the whole series in their mind - like George Lukas with Star Wars - or do they put it all together in the final sprint? Had I some master plan underlying my ThinkBoxes? That is the question, I should answer.

Reflecting on that, I must admit that I did not have intentionally a grand scheme. Although, unwillingly I might have written suggestions and mental challenges to make the “just an ordinary day at HQ SACT, somewhere in the near future” a reality. I wrote my first ThinkBox as a reply to the COS’s question during an office call, the only one as far as I can remember. He dared me on the nature of transformation. “We are Allied Command Transformation, but what is transformation?” An honest question that even today few can answer outside the ‘definition’. Instead of giving some theoretical exposé on the spot – I was sure he had read all the documents on the topic - I accepted the challenge but asked him some time to reflect on a good answer.

After some reflection, I decided to describe a normal workday in HQ SACT in the future, some three years ahead. Dreaming it to be realized before my first tour ended. I mailed the COS my story and published it on the intranet. The first ThinkBox was born. From then on, all the other editions were attempts to push our organization in the direction of transformational HQ.

Surely, that ambition was just too big, but only those who aim at the moon reach the sky. At the end of my second tour, we are not even near the situation sketched in my first writing. In all honesty, we are closer to the reality the day I wrote it than to the one I dreamed of. My hope, however, is that I have planted some seeds for the continuation of transformation, or continuous innovation if you want to use a more recent buzzword.

If I were a great author, all would have let to that last edition, the “Endgame”. However, I am not of that calibre, not even good enough to write something under the title “Requiem”. The conclusion of a life in ACT. This title would also be too negative like I gave up believing in the possibilities. That was and is not the case. Scratch that title too.

With the end nearing, I still had no title, nor idea what to write. Did I experience a writer's block eye-to-eye with the ground rush? This term comes from skydiving and describes the optical illusion that the ground – the end - is abruptly rushing up to meet you. The resulting sensation may trigger an early deployment of the parachute, at an unsafe altitude. Was I in such a situation as the date of my departure approached? The clock ticking mercilessly. Do I have enough time to finish what I started in 2013? Yes, I felt the urge to deploy whatever came out, but was it wise to begin my swan song with a title referring to a sport characterized by jumping out of a perfectly good aeroplane? Did I start ThinkBox hoping to reach safely my objective? My stress level was rising. Decision time!

Of course, opening your chute too late is an equally dangerous situation. I did not have an altimeter indicating the right moment to pull the handle. So when is the good time? Is perfect the enemy of good? What kind of parachute will deploy when I jerked the safety and uploaded the article now? Freefalling without any thought about deadlines or messages was much more fun.

The weekend before my return flight, I still had no title, no article to publish. Returning to my freediving practises, I took one deep breath and went for the deep to surface again.

During our last road trip to Washington State, we visited Seattle. Walking in the city under a heatwave, we decided to search for a Subway for lunch and followed our guide Google Maps. Aware that a GPS is not infallible in an urban environment, we did not mind the touristic sidetracks it offered involuntarily. Being human, an animal of habits, I ordered what I considered the best foot long. The Sandwich Artist, a woman of seemingly Chinese descendant, asked me what kind of cheese I preferred. Without a doubt, I asked for mozzarella. She points at a bowl with cheese and said: "Pepper jack". OK, the "r" might have more sounded like an "l" but I was sure she did not repeat my favourite dairy product. Aware that my English sounds foreign too, I slowly repeated, but not too slow to offend her: "MOZARELLA". To my surprise, she pointed to the same bowl while – I got the impression – slowly pronunciating "PEPPERJACK". Motivated to get what I want, I repeated my mozzarella message. Only to get the same pepper jack reply. After three times, I gave up and retreated with a sandwich covered with the well-promoted pepper jack.

It took some weeks to understand the moral of this story. It is not about clarity of communication. I think we both knew the message we wanted to get across. No, the takeaway – besides the sandwich I did not plan to order – of this incidence is that even to most motivated person will succumb to any message if repeated often enough. The more focus on the output, the faster it happens. Not surprisingly the three Rs of education are: repetition, repetition, and repetition.

Projecting that insight on my ThinkBox series, I hope that 50 times is a high enough number of repetitions to get through. I aimed to push you enough thought-provoking lecture to kick-start you thinking outside the comfy box hoping that I somehow have planted enough seeds to realize my first article. You and the future will be the judge of that.