Tempus Fugit: Time as the main parameter for the Strategic Engineering of MOOTW

DIME

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Tempus Fugit:

… in many Scenarios

Objectives

To analyze current operation to identify the critical issues to be addressed in order to develop a strategic capability based on innovative technologies.

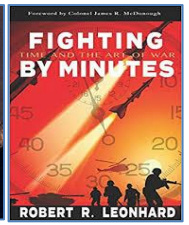
To review the importance of ***Time*** as the main factor that leads to success in a broad set of cases.

To identify needs and requirements for let decision makers and experts to be able to interact within common immersive and intuitive interactive simulation frameworks.

To develop the concept of Strategic Engineering as a new discipline addressing these issues and preparing new generations of decision makers and scientists.

Time vs Geometry in the Battlefield





Sun Tzu defines the importance of completing proper quantitative analysis by saying that "the general who wins a battle makes many *calculations* in his temple were the battle is fought".

In the Modern era, Napoleon should be credited as the first Strategist that derived from the management of the forces on the battlefield an insight about "….the vital significance of time and its accurate *calculation* in relation to space. "*The loss of time is irreparable, in war...Space you can recover…time never*, he once asserted."

In the contemporary age, the credit to have re-introduced meaningful considerations about time *calculation* and its impact in the military operations, have to be given to Robert R. Leonhard, which elaborated the concepts in his opera "Fighting by minutes: Time and the Art of War (1994).

Strategic Engineering

These considerations suggest the need to develop "Strategic Engineering" as a new discipline capable to address the issues posed by modern conflicts, with the aim to prepare new generations of scientists and decision makers, able to develop the capabilities needed for the Strategic Management of Military Operations Other Than War (MOOTW).

Time is one the most scarce and unpredictable of the available resources when developing strategies and plans in MOOTW. A proper management of Time could often mark the difference between success and failure.

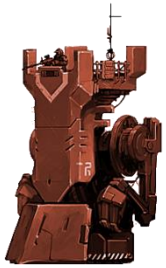
Models Strategy Developments

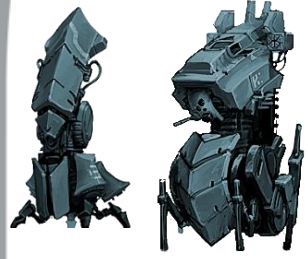
It is worth considering the potential of a new emerging discipline such as Strategic Engineering in supporting achievements of strategic goals respect existing risks and stochastic factors, especially into unusual mission environments such international mission, asymmetric or hybrid warfare

Now the necessity to develop a conceptual approach and methodologies to continuously control strategy evolution respect a very dynamic and unstable environment, makes it evident the actuality of this consideration.

Strategy Developments

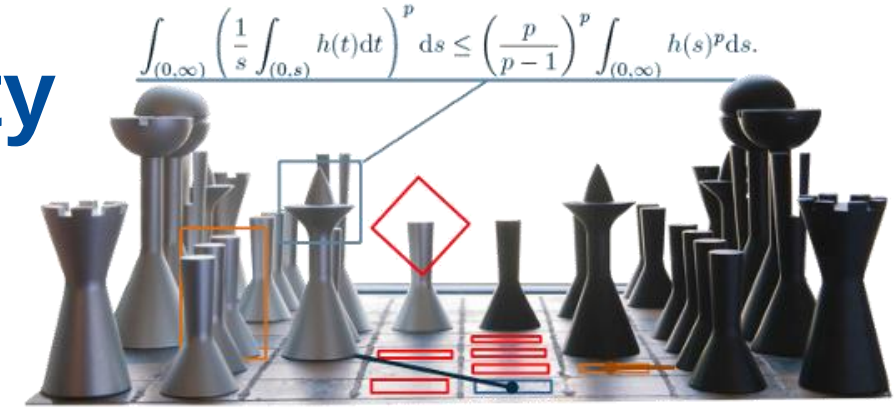
Aleksandr Svechin (1926) wrote that "*it is extraordinarily hard to predict the conditions of war. For each war it is necessary to work out a particular line for its strategic conduct. Each war is a unique case, demanding the establishment of a particular logic and not the application of some template*"





From this point of view even humanitarian operations and large plan often fail in many contexts even related to small regions when resource applied appear to be huge (Muchemi 2017; Bruzzone et al., 2017); sometime it seems we are very focused on short terms objectives or detailed aspects missing the real strategic perspective, or vice versa, we look to satisfy so many inter-related factors generating not satisfactory results

Complexity Simplicity



If we look at recent MOOTW PSO (Peace Support Operations) based on highly sophisticated equipment, well trained resources and with the elaboration of conceptually advanced campaign plans, clash against the limited success achieved over the Time Such focus on detailed planning input the risk to be missing the whole picture.

Currently as reaction against this attitude, it is becoming very popular among experts the sentence "*complex problems have simple, easy to understand wrong answers*"; this is usually known as Grossman's Law and results from *misquoting* Mencken's phrase "*for every complex problem, there is a solution that is simple, neat, and wrong*".

We should be careful about simple solutions to complex problems.

Short Terms vs. Strategies

The main problem is related to the short terms goals versus long terms achievements, and the necessity to satisfy a too wide audience of supporters without the capability to lead them.

Currently is emerging a new discipline defined as *Strategic Engineering* that represent comprehensive approach to design, develop and use new solutions in order to achieve strategic results against risks, uncertainty, competitors, threats and within critical environments (Bruzzone 2018).

Based on the integrated use of innovative technologies such as M&S (Modeling and Simulation), AI & IA (Artificial Intelligence and Intelligent Agents) and Machine Learning as well as Data Science, have a wide spectrum of application fields from Defense to Homeland Security, from Government to Industrial Applications

Take Time to deliberate,

but when the Time for Action comes,

Stop thinking and Go!

Napoleon

Among all challenges in Strategy Development, it is evident that the most crucial element is represented by Time as well vs the capability of achieving specific results.

Time, considered both in its physical and human perception dimensions, looks like a neglected factor in the political and military analysis in the Western Countries.

The risk of wasting a scarce resource in conflicts such as Time, marks a turn down in its comprehension and management.
However Time, intended as physical and human dimension, it is ineludible and its mismanagement poses serious hindrances to strategy development and execution.

Afghanistan

As anticipated, the purpose of this paper is to propose a Time Management in military operations vs other measurable indexes of effectiveness, by the contribution of the surging discipline of Strategic Engineering, which has the potential to achieve strategic results against risks, uncertainty in the management of MOOTW and other types of Asymmetric confrontation.

A MODERN EXAMPLE: AFGHANISTAN

“Throughout the ups and downs of this conflict, it's become evident that the United States is not going to defeat the Taliban insurgency, even though it can prevent a Taliban victory”

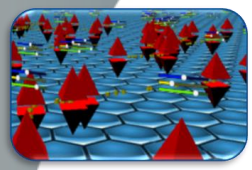
The Washington Post, 1st September 2018

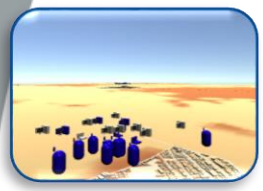
Examples to Understand…
… and Experiment

- This case it is a good example of how quantitative analysis based on reliable models should be applied to consider human factors and timing in strategy development.
- As such condition happen, as in the case of Afghanistan, the Time turns to be a decreasing resource for the Western Powers, which are affected by internal public opinion, current alliances framework and neighboring country attitude, and last but not least, economic sustainability.

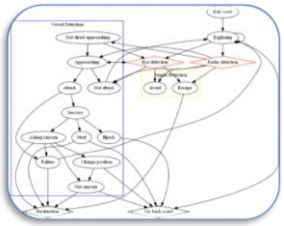
Strategy is… in details

A Model of MOOTW





Indeed currently the authors are considering to develop a model that hazards a correlation among the time necessary to reach the END STATE and the most critical parameters; among these it is considered for sure the human development index of the Country to be stabilized, the GDP of the intervening country, the intervention limit threshold, identified in terms of power (e.g. task force, battlegroup, etc.) beyond which the level of commitment of the intervening nation is subject to the scrutiny of public opinion. All these elements are strong affecting the time scale and to delay specific achievements could result in losing support of public opinion, decision makers or even of your own troops.



Methods & Elements

Strategic Engineering is the process of using engineering approaches and technologies in design and analysis of new solutions in order to achieve Strategic Results against time constraints, risks, uncertainty, and multi faced threats in critical environments.

Strategic Engineering should be structured in order to able to be effective into planning, execution, evaluation, assessment and drive of MOOTW and Country Building Operations at Political and Military Strategic levels

So, the optic of a Country Stabilization in the contest of a MOOTW driven by Strategic Engineering, it is about economy and infrastructure development at the same pace of security, with an eye to the hourglass.

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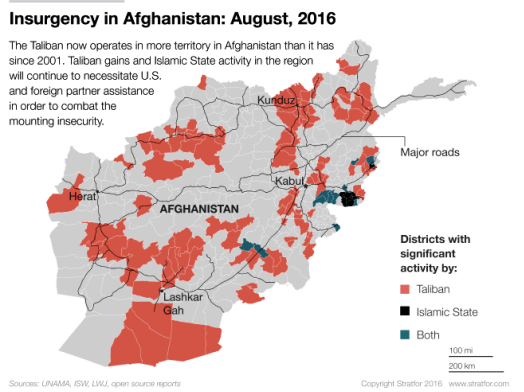
Stabilization & Time



In the stabilization of Afghanistan, the Western Powers have so far followed the traditional approach, which is the one adopted at the WWIIs end: win militarily, then initiate the dissemination of western style democracy together with an aided economic development.

This was indeed right for a symmetric confrontation, where the challenge it was winning the military confrontation in its geometric domain, but has proven so far unsuccessfully in asymmetric conflicts, where instead the time, in its physical and human dimension, it is the dictating size.

Strategic Engineering in such contests has the potential to introduce a new dimension in the military operations, by integrating in the conflict management the capacities deriving from Quantitative Modeling for to Decision Making Support, paired with Strategic Thinking and Scenario Analysis competencies.

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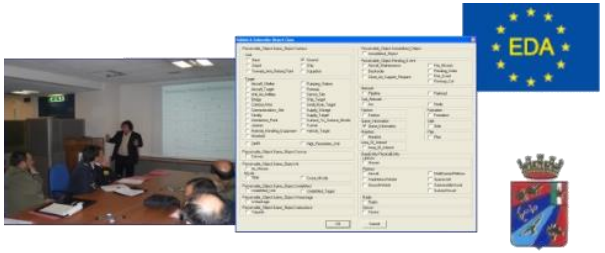
CAPRICORN: CIMIC & PSYOPS



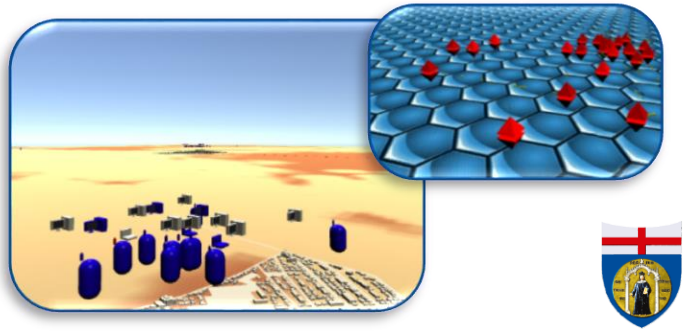
… in Afghanistan

CAPRICORN allowed to demonstrate the capabilities in the complex and critical sector of Military Operation Planning, specifically for asymmetric warfare scenarios involving CIMIC and PSYOPS, by of using CGF (Computer Generated Forces) based on Intelligent Agents (IAs) CGF (Computer Generated Forces)

Many Other Applications: adding Spices by T-REX

Threat network simulation for REactive eXperience

The Hybrid Wardare is part of T-Rex environment and allows to evaluate the impacts on operations and estimates their magnitude This approach allows to considerate also the Cyber Domain Complexity and the impacts on ICT process and infrastructures as well as Social Engineering elements. The MS2G (Modeling, interoperable Simulation & Serious Games) approach, make possible to raise users awareness and improve performance reducing vulnerabilities



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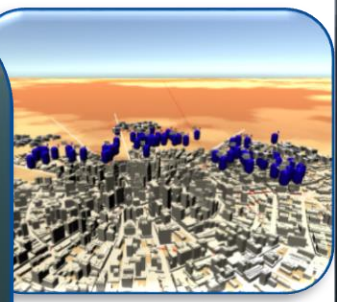
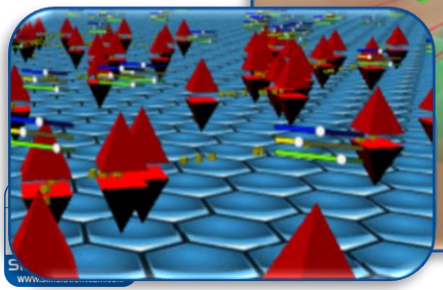
Hybrid Challenges & Autonomous Systems

Autonomous Systems represent crucial elements for Hybrid Challenges both in terms of available Resources and Threats
The T-REX simulates towns, infrastructures, people, UxV as well as Cyber & Real coordinated actions that affect whole System





Conclusions

Current US & NATO commitment to Afghanistan is expensive and drags itself on rather than a clear ending. The situation is going as condition based, spanning over a temporal dimension which encompass a generation and brings further evidence that it has been not successful to pretend to have capability to extinguish complex conflicts with ethnic & tribal issues, civil war, criminal panels.

Event the country/institution reconstruction, while being framed by (relatively) unfriendly powerful neighbors, and focusing just, it is has been proven not successful.

Strategic Engineering has the potential to introduce a new dimension in this kind of contexts, by integrating in the conflict management, the capacities deriving from Quantitative Modeling for to Decision Making Support, paired with Strategic Thinking & Scenario Analysis skills.

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References

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