Introducing Military Art to Interventions in Systems Oriented Design

Slensvik, Thomas

Relating Systems Thinking and Design
(RSD12) Symposium | October 6–20, 2023

Introducing Military Art to Interventions in Systems Oriented Design

Thomas Slensvik

This paper discusses the integration of traditional military concepts into systems oriented design (SOD) to enhance interventions in societal systems. It introduces three central concepts in military operational art: friction, culmination, and synchronisation.

The concept of friction, as defined by Clausewitz, refers to the challenges, uncertainties, and obstacles that arise during the execution of military operations. When applied to SOD, it emphasises the need for adaptability and adjusting interventions based on a deeper understanding of the system being intervened in. Culmination, another concept from Clausewitz, highlights the critical moment when a successful action begins to decline. In the context of societal interventions, it becomes important to assess the limits of an intervention, recognising when it no longer remains productive. Synchronisation, a concept that emerged with the complexity of military operations, involves coordinating and harmonising diverse resources, capabilities, and actions to overcome resistance and achieve desired outcomes. In design and system interventions, a similar concept called Portfolio Interventions exists, which emphasises the need for coordinated actions and the linking of interventions within a portfolio.

The abstract concludes by emphasising the importance of experimenting whit other concepts from different praxeologies into SOD while maintaining a designerly mindset. It recognises the challenges of balancing mindset and methods and highlights the need to further refine and develop the beneficial

aspects of these methods. Ultimately, the goal is to advance SOD and make interventions more successful in addressing complex societal issues.

KEYWORDS: systemic design, systems oriented design, interventions, operational art, friction, culmination, synchronisation.

RSD TOPIC(S): Cases & Practice, Methods & Methodology.

Experimenting with systems oriented design in military planning

In the autumn of 2022, I led a workshop utilising systems oriented design (SOD) to plan for a military operation in a fictitious nation. SOD introduced a comprehensive and human-centred approach that yielded significant benefits, especially for a better understanding of the complexity of the situation. However, during the workshop, we recognised certain limitations in effectively addressing broader societal issues through interventions. This realisation prompted us to explore the integration of traditional military concepts from the theory of "operational art" to enhance intervention execution—an area that could greatly benefit SOD as a whole.

I delved into three key concepts within the theory of operational art, namely "friction," "synchronization," and "culmination," to optimise implementation strategies. These concepts, being integral parts of operational art, were investigated with the aim of refining and improving intervention strategies. Seeking valuable feedback and critique from fellow designers worldwide, I present these three concepts. By doing so, my intention is to advance the development of SOD and enhance the critical task of achieving successful interventions in our complex world.

Using military experience to study societal interventions

The intersection of military planning and design raises numerous ethical and moral considerations, many of which delve far beyond the scope of this paper. Armed forces constitute an integral component of most societies and maintain profound connections with cultural and social structures within nations. The rationale behind incorporating certain concepts from military theory into SOD lies in the fact that military operations

inherently represent forceful interventions in society, drawing upon centuries of practical experience—both positive and negative. The inquiries presented in this paper merely scratch the surface of a broader discourse within a significant and imperative field of discussion.

Introducing new concepts related to interventions

“What is a leverage point for one author, is a system or an intervention for another” (Leventon et al., 2021). The introduction of new concepts related to interventions is both difficult and exciting. First, there seems to be no common vocabulary or understanding of what constitutes a system, the lever, the leverage points and the interventions. This presentation is, therefore, not fully developed when discussing the relation to these terms but has a pragmatical view, introducing three concepts and naming a few examples of comparable concepts already studied within the field of design. That said, I believe the experience from the military concepts may challenge, be complementary or further advance the already existing concepts.

Operational art

Operational art, a concept that originated in the 19th century, found its roots in the works of military theorists such as Carl von Clausewitz and Antoine-Henri Jomini. However, it was not until the early 20th century that the term "operational art" gained wider recognition and became a distinct concept within military thinking. One of the key figures in its development was the Russian military strategist Aleksandr Svechin. Svechin proposed the idea of operational art as a separate level of military thought. The term "operational art" conveys the notion that military planning and execution at the operational level involve elements of creativity, subjectivity, mastery, and adaptability, akin to the qualities often attributed to artistic endeavours. Operational Art is currently described in many NATO doctrines (AJP 5 Allied Joint Doctrine for the Planning of Operations, 2019, s. 1–13) and is a vast field of academic research within military schools. However, the three concepts chosen to discuss, even if they are central concepts in operational art, were not chosen on the basis of a rigorous theoretical analysis of this field but from experience and observations during workshops. The basis is, therefore, praxeology supported by existing theories used in new ways.

Three central concepts in operational art

Friction

The notion of friction in military theory was first introduced by the renowned military strategist and General Carl von Clausewitz. In his theory of war, Clausewitz identified "friction" as a fundamental concept. He defined friction as the myriad of factors that give rise to uncertainties, challenges, and obstacles during the implementation of military operations (Clausewitz, 1989).

The contemporary discourse, as explored in the UK Doctrine, delves into the intricate connection between planned objectives (conditions) and the concept of friction in warfare, acknowledging the complexity and unpredictability of crises. It highlights that despite meticulous planning, it is possible to fulfil the planned actions without achieving the desired outcomes, potentially giving rise to unintended consequences. Conversely, one may attain the desired outcome but deviate from the original plan. In both cases, unforeseen consequences emerge, serving as a reminder of the unforeseeable nature inherent in such scenarios (AJP 3 ALLIED JOINT DOCTRINE FOR THE CONDUCT OF OPERATIONS, With UK Elements, 2019, s. 2–25).

In summary, friction, as defined by Clausewitz, refers to the myriad challenges, uncertainties, and obstacles that arise in the execution of military operations. It represents the gap between the ideal and the reality of warfare, and effective commanders must account for and manage friction to achieve success on the battlefield.

When using the term friction in relation to Systems Oriented Design (SOD), it becomes apparent some similarities, mainly that interventions often deviate from their intended course. This realisation must be taken into account during the planning process. The key element for managing such deviations lies in acknowledging the need for adaptability and adjusting not only the intervention itself but also our understanding of the system we are intervening. This aspect of adjusting our understanding of the system holds significant importance.

In this context, it is pragmatic to recognise that systems, in their essence, do not exist independently but are rather models of reality. Like any model, they inherently simplify

and reduce the complexities of the real world. When intervening in a system, certain elements that were previously identified outside the system or were not initially recognised or accurately represented may emerge as crucial factors. This understanding may seem fundamental, yet it is vital to comprehend that interventions are built upon a model of reality. Consequently, it is the model and the intervention that should be adjusted as we gain further insights into the actions and effects within the real world rather than holding the belief that the opposite is feasible.

Friction is an inherent and natural effect in complex situations, as complete understanding and calculability are unattainable. The essence lies in effectively managing this friction rather than attempting to eliminate it entirely.

Culmination

Carl von Clausewitz also defined the culmination point (also known as the "culminating point of victory") in his renowned work "On War." According to Clausewitz, the culmination point refers to the critical moment in a military campaign or battle when the momentum of success begins to shift and decline for the attacking force. Clausewitz argued that every military operation has its limits and that there is a point beyond which it becomes increasingly difficult to sustain success (Clausewitz, 1989).

According to Clausewitz, the culmination point is the turning point where the momentum begins to wane, and further progress becomes increasingly difficult. This concept emphasises the importance of recognising and assessing the limits of success to avoid overextension and potential setbacks.

Thinking about interventions in societal systems in general, the relevance is to understand that at some point, the intervention stops being productive. This can, of course, be after the goal is achieved and ripple effects create cascading results, but it can also be before the envisioned result has been achieved. Culmination as a concept may, therefore, be helpful to assess the limits of an intervention. Similar concepts can be found in several other practical fields, like the sunk cost fallacy in economics.[1]

[1] Sunk cost fallacy: the idea that a company or organization is more likely to continue with a project if they have already invested a lot of money, time, or effort in it, even when continuing is not the best thing to do. From https://dictionary.cambridge.org/us/dictionary/english/sunk-cost-fallacy

The idea is not unique, and, for example, the extensive work done within design for sustainability and adaptive waves of resilience is complimentary to this thinking (Luthe & Wyss, 2015). In this context, the friction will vary depending on the state of resilience, and the awareness of the resilience can reduce the expected friction; the synchronisation will help to overcome or bypass some of the tension points generating the resilience, and the culmination will help understand when to stop or pause the intervention temporarily until the resilience shifts to a more benign state. The use of these concepts is not mathematical, and therefore, the military theory calls this “art”, but this understanding and dancing with the system is very much what designers do in their combination of pragmatism and creative ways.

It is important to note that this idea is not exclusive, and for example, the extensive work undertaken in designing for sustainability and adaptive waves of resilience complements this line of thinking (Luthe & Wyss, 2015). In this context, the level of friction experienced will vary based on the state of resilience, and awareness of this resilience can diminish expected friction. Synchronisation, which I will discuss next, aids in overcoming or bypassing tension points that generate resilience, while the concept of culmination assists in understanding when to halt or temporarily pause an intervention until resilience shifts towards a more favourable state. These concepts are not governed by mathematical precision, and hence, they are referred to as "art" within military theory. This understanding of art and this dance with the system closely align with what designers often engage in through their blend of pragmatism and creative approaches.

Synchronisation

Military synchronisation is not a singular method but rather a concept that emerged as military operations became increasingly complex in the 20th century. Various writers, including Aleksandr Svechin, Eric von Manstein, and Ferdinand Foch, discussed this concept while developing the idea of the operational level of war. The operational level of war is the idea that there is a strategy that gives the goals of the intervention, the tactics are the actions taken, while in between, there is a level of coordinating and orchestrating these actions to achieve the goals, the operational level. Today, synchronisation has become an integral part of military operations.

The necessity for synchronisation arises from the inherent resistance within the system that is being contested or intervened in and increases with the system's complexity. To overcome this resistance and achieve desired outcomes, it becomes crucial to coordinate and harmonise the utilisation of diverse resources, capabilities, and actions. Synchronisation entails aligning the timing, sequencing, and integration of activities across different domains such as land, air, sea, and cyberspace. Furthermore, it extends beyond purely military means and incorporates non-military elements like the economy, diplomacy, and information. By doing so, synchronisation aims to create synergistic effects and maximise the overall impact of operations.

An already similar concept exists and is emerging within design, such as Portfolio interventions, presented by Giulio Quaggiotto (2020), “No Silver bullets. How UNDP learned to embrace systems thinking.” Further description of this concept is also described in “Portfolio approaches to tackle complex challenges. Notes on an emerging practice” (Belle & Quaggiotto, 2020). The authors discuss the need for more coordinated actions and that linking interventions in a portfolio is an emergent practice in design and system interventions. “(I)n the pursuit of an approach that can better connect transformational intent to transformative action there are clear entry points, but no single or simple pathway. Much depends on organisational leadership, structures, mindsets, and context” (Belle & Quaggiotto, 2020). Using the concepts already existing under the wider umbrella synchronisation in military operational art might give some ideas on how to better visualise and design a holistic effort to reach the transformational goals.

One of the differences seems to be that even if Belle and Quaggiotto present a specific model of portfolio interventions, there seems still to be more of a “cluster” of interlinked interventions. Synchronisation is the “economy of force” and “concentration” and stacking in time and order to nudge a system at a chosen time (and place). This involves a systematic analysis of the environment the system exists in, the identification of key objectives, and the selection of appropriate means to achieve those objectives. As a framework for synchronising various elements and actions within a coordinated intervention, a visualisation of the efforts and their linking is drawn, called the operational design.

By incorporating the wider concept of synchronisation from military operational art, valuable insights can be gained, among others, in visualising and designing a holistic effort to achieve transformational goals. One key difference is that Belle and Quaggiotto present a specific model of portfolio interventions, which appears to be more of a "cluster" of interlinked interventions. On the other hand, synchronisation in military operational art involves the economy of force, concentration, and stacking actions in a deliberate sequence and timing to influence a system at a chosen time and place. This concept is more general in description but, in practice, a well-proven methodology for synchronising huge resources in a wide spread of cultures (multinationals) and different backgrounds (different training). It requires a systematic analysis of the system's environment, identification of key objectives, and the selection of appropriate means to achieve those objectives. To facilitate the synchronisation of various elements and actions within a coordinated intervention, a visual representation of the efforts and their interconnections is drawn, known as the operational design.

Nevertheless, it is important to acknowledge that the military model of thought often follows a linear and reductionistic approach. For this model to provide genuine value for designers, it must be employed through a designer's lens. This entails selectively incorporating useful elements while preserving the designerly way of thinking, which combines creativity and a human-centric focus. Achieving a balance between mindset and methods has been a recurring challenge, as observed during the introduction of design to military planning.

An example of this challenge arose when a designer worked within a military school to develop a more creative approach to planning. The military quickly adopted and implemented the methods but struggled to fully grasp the designerly mindset. (Ryan, 2016) In the present context, the roles are reversed, and it is hoped that designers can further refine and develop the beneficial aspects of these methods without being constrained by the military mindset. This allows for the integration of valuable components while retaining the core principles of design thinking.

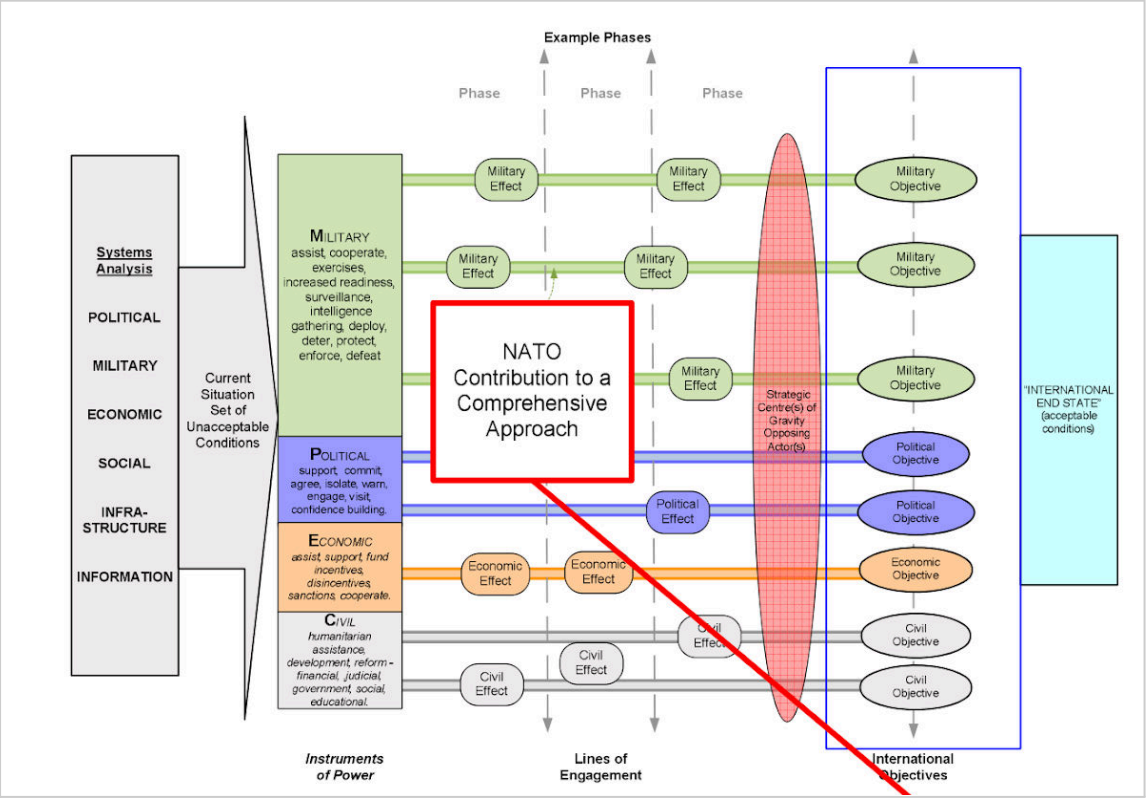

Figure 1. Illustration of an operational design from NATO planning documents. (SACEUR, 2013)

"Start from where you are."

In *Systemic Interventions*, Gerald Midgley (2012) acknowledges the extensive literature on intervention methods, which can be overwhelming, yet he highlights the need for further development in the field. In his concluding paragraph, Midgley encourages readers to support, develop, and apply his own approach to systemic intervention or to approach it sceptically and offer critiques. He emphasises the importance of making the results of these discussions public, as collective learning can emerge from an ongoing debate (p. 401).

Reflecting on my own experiments of introducing Systems Oriented Design into military planning, I realised that certain concepts used in military planning could benefit designers seeking to intervene in large, complex societal systems. This led me to explore the concepts of friction, culmination, and synchronisation as potential tools for designers in such interventions. While these ideas may not be entirely ground-breaking within the design field, as they resemble existing concepts, considering them from

different perspectives and practices could contribute to advancing the discourse on interventions. By drawing insights from the military context and praxeology and integrating them into design thinking, we can enrich the ongoing conversation and further the exploration of effective interventions in complex systems.

Bibliography

1. AJP 3 ALLIED JOINT DOCTRINE FOR THE CONDUCT OF OPERATIONS, With UK Elements: Bd. Ed C version 1. (2019). NATO. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1139368/AJP_3_Conduct_of_Ops_UK_elements_C1.pdf
2. AJP 5 Allied Joint Doctrine for the Planning of Operations. (2019). NATO. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/971390/20210310-AJP_5_with_UK_elem_final_web.pdf
3. Belle, G., & Quaggiotto, G. (2020, februar 24). Portfolio approaches to tackle complex challenges. Notes on an emerging practice. Medium. https://undp-ric.medium.com/portfolio-approaches-to-tackle-complex-challenges-notes-on-an-emerging-practice-135b44ed0507
4. Clausewitz, C. von. (1989). *On war* (M. Howard & P. Paret, Red.; First paperback printing). Princeton University Press.
5. Leventon, J., Abson, D. J., & Lang, D. J. (2021). Leverage points for sustainability transformations: Nine guiding questions for sustainability science and practice. *Sustainability Science*, *16*(3), 721–726. https://doi.org/10.1007/s11625-021-00961-8
6. Luthe, T., & Wyss, R. (2015). Introducing adaptive waves as a concept to inform mental models of resilience. *Sustainability Science*, *10*(4), 673–685. https://doi.org/10.1007/s11625-015-0316-6
7. Midgley, G. (2012). Systemic intervention: Philosophy, methodology, and practice. Springer Science+Media.
8. Quaggiotto, G. (2020, oktober). No silver bullets. How UNDP learned to embrace systems thinking. Relating Systems Thinking and Design (RSD9) 2020 Symposium, 9-17 Oct 2020, Ahmedabad, India. https://rsdsymposium.org/

9. Ryan, A. (2016). A Personal Reflection on Introducing Design to the U.S. Army. https://medium.com/the-overlap/a-personal-reflection-on-introducing-design-to-the-u-s-army-3f8bd76adcb2
10. SACEUR. (2013). COPD Allied Command Operations Comprehensive Operations Planning Directive Interim V2.0. NATO. https://www.cmdrcoe.org/download.cgf.php?id=9