Stumbling into Design:
## Teaching Operational Warfare for Small Militaries in Senior Professional Military Education

Dr. Paul T. Mitchell
Canadian Forces College

Introduction

Design is an approach for thinking through complex problems. It is employed in a variety of contexts including product design, architecture, medical services, and business strategy, however, growing numbers of militaries are employing it:

– Israel: Systemic Operational Design
– US: Army Design Methodology
– Australia: Complex Adaptive Operations
– NATO: Alternative Analysis
– United Kingdom
– Netherlands
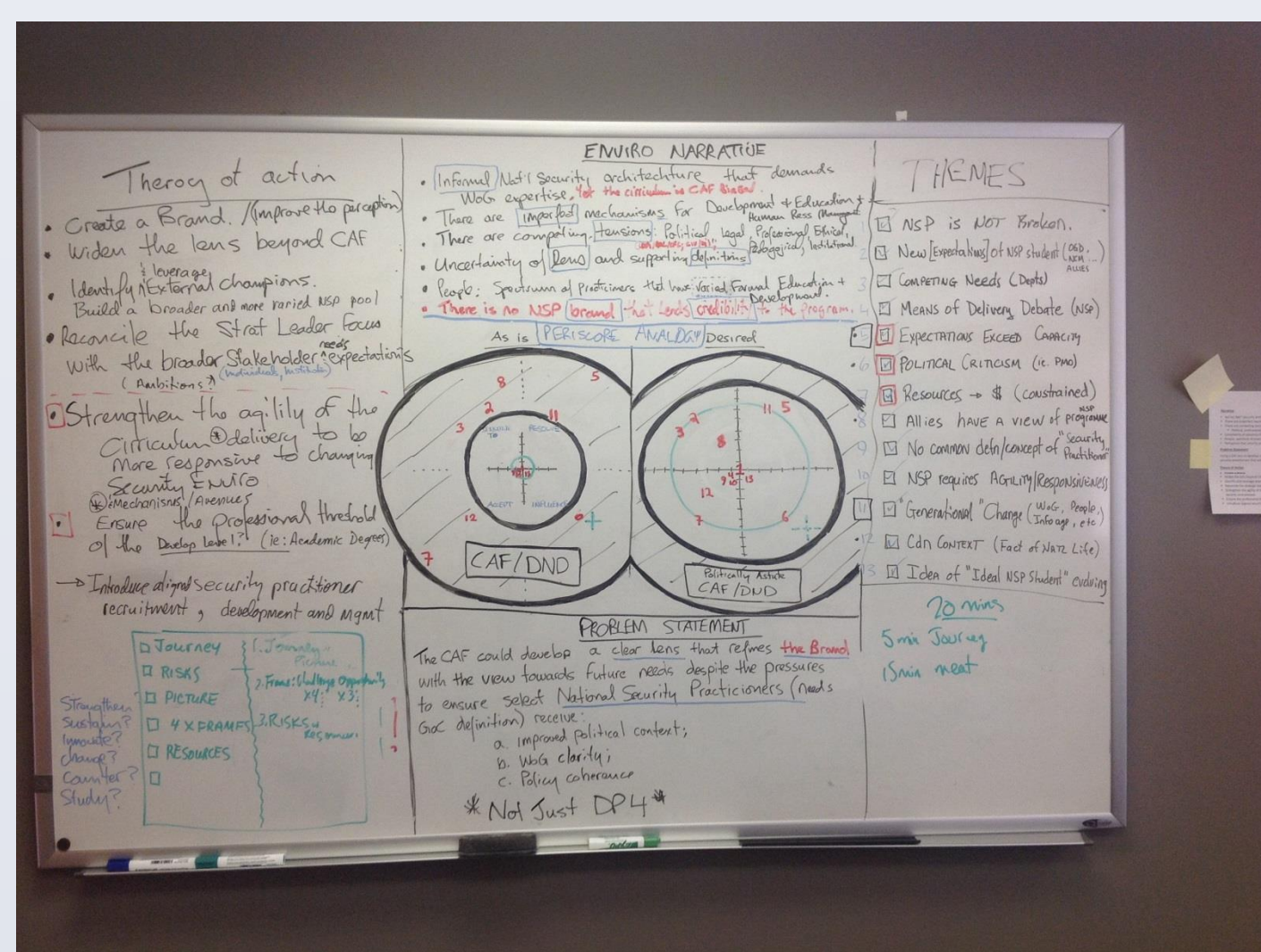
NSP Design Drawing: Senior PME Visualization 2015

Objectives

• The operational planning process traditionally taught at staff colleges is a linear approach which doesn't work well in complex problems
• Design valuable approach for small militaries given the lack of control they have over the environment.
• The historical development of military activity demonstrates growing structural complexity
• Structural complexity is compounded by increasing interactive complexity as stakeholders multiply


Military "Artifact" Trajectory
Krippendorf, 2006
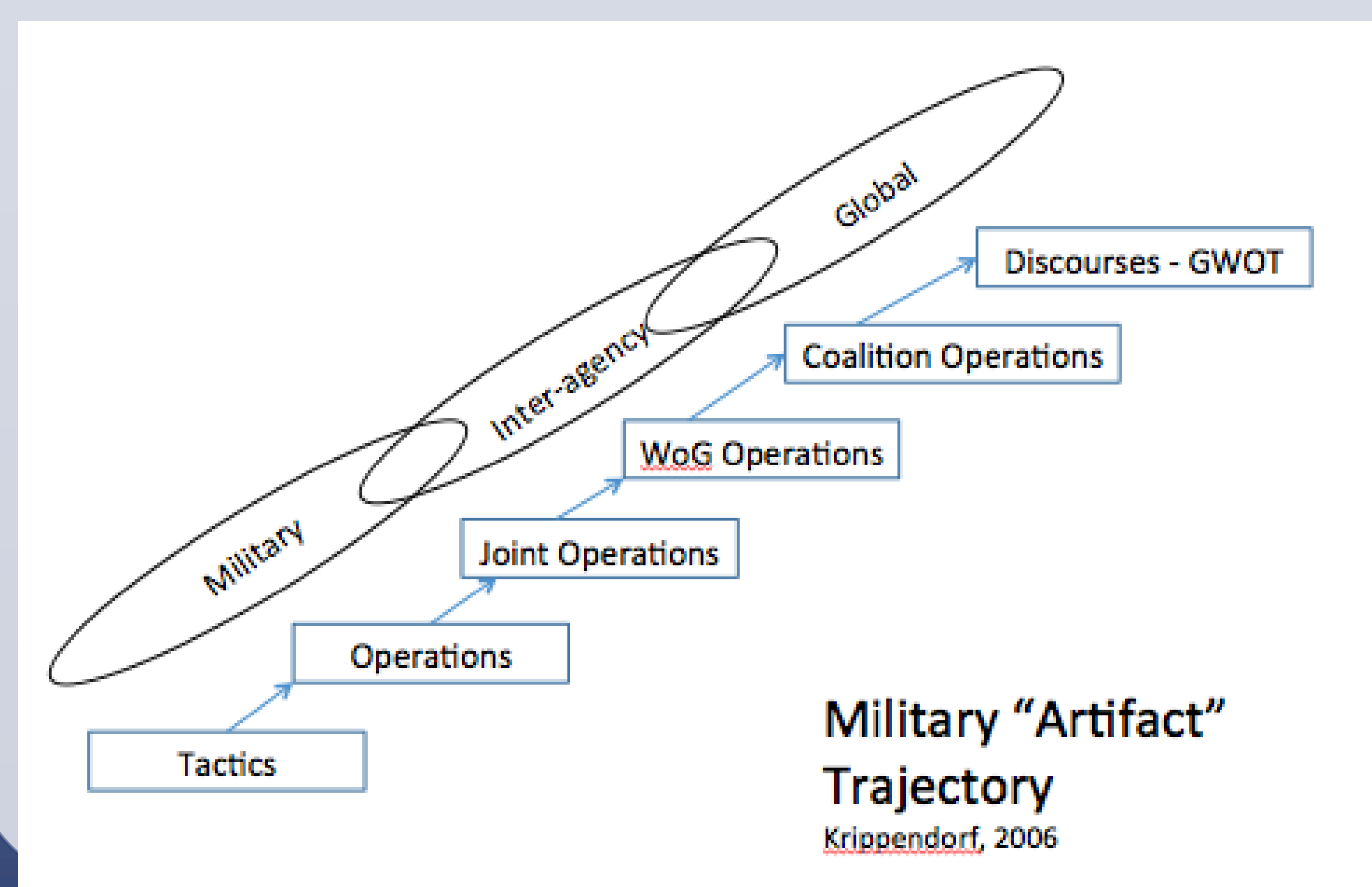
Methodology

Most design techniques employ similar models

• What does the current environment look like?
• What do we want the environment to look like?
• What is stopping us from achieving our goals?
• How might we influence the environment in desired direction?
• What does the environment look like after we have intervened?
• What have we learned?
• How do we change what we are doing?
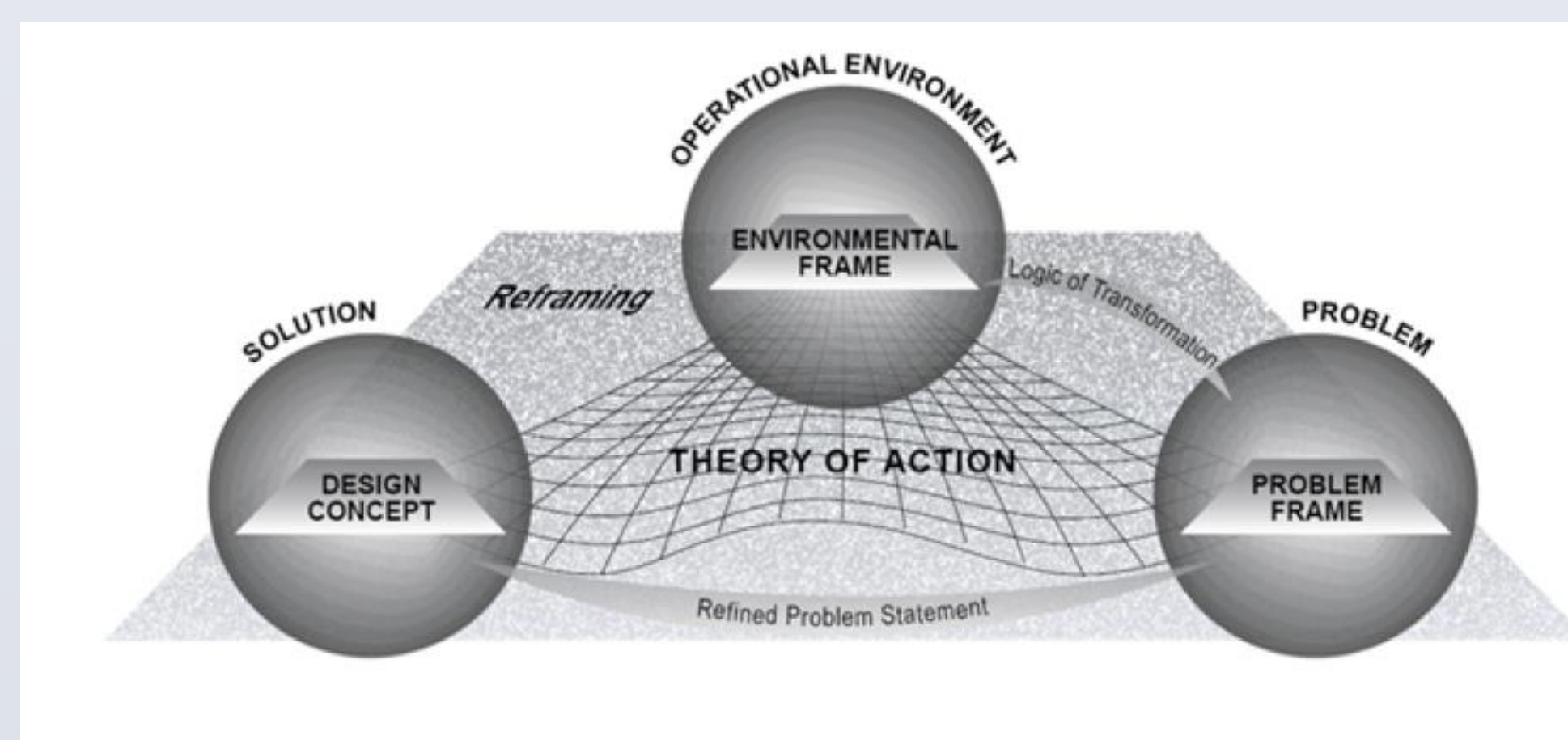
The "Environmental Frame"

Design is a process in which the environment, problem space, and possible solutions are considered not in a step by step fashion, but as a whole. In the first iteration, however, initial solutions (or proto-types) are heavily reliant on poorly understood assumptions about the environment. These included the problematic nature of teaching strategy and operations to small militaries who rarely operate at those levels, and bring few capabilities to large military projects and the typical separation of strategic objectives from operational ones. The civilian status of the course developer also complicated this appreciation
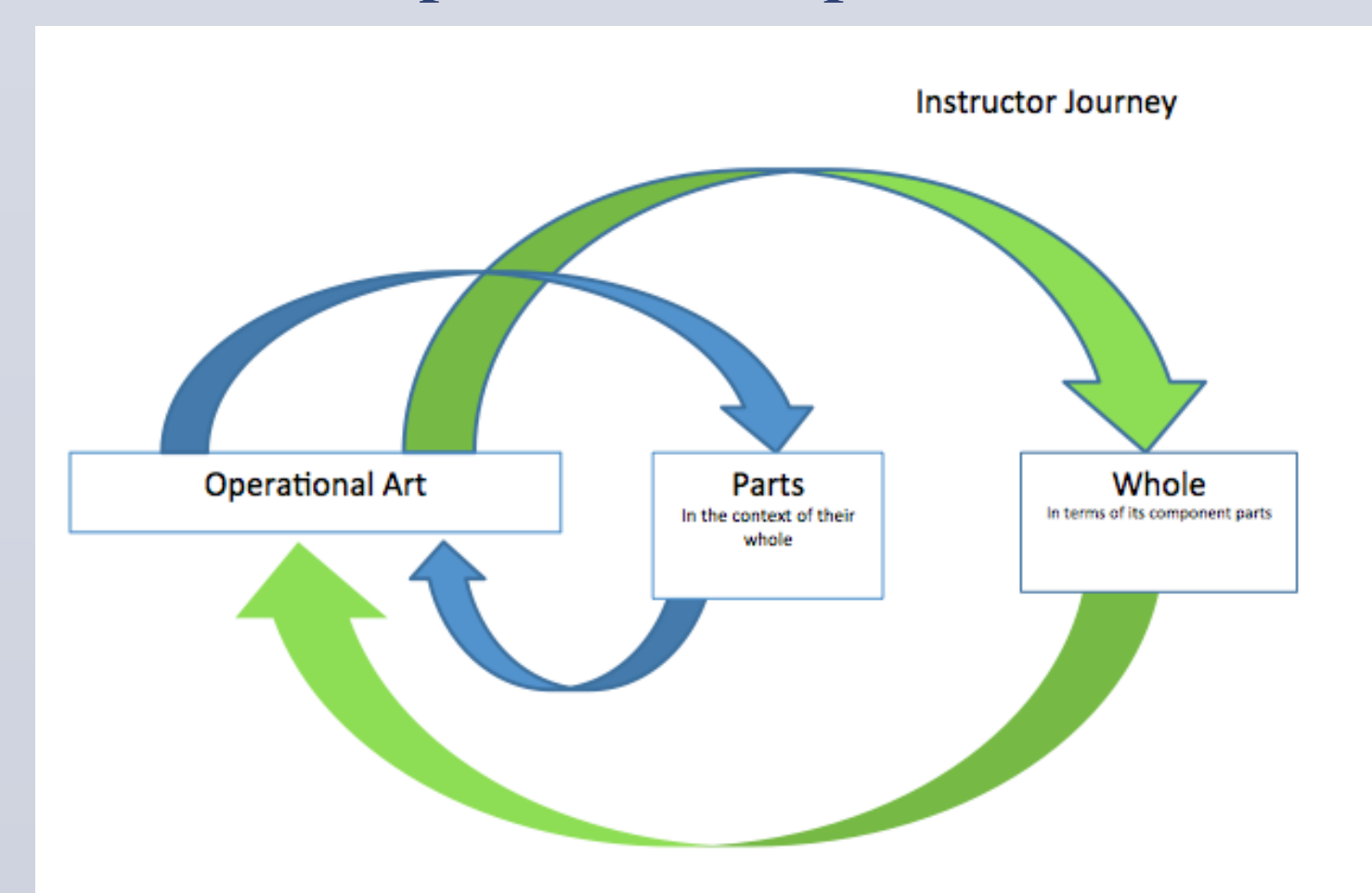

Results: course design evolution

The evolution of the course began with the redesign of an obsolete senior PME course on Operational Doctrine. This was converted from a "how to do" to a "how to think about" approach, which explored epistemological problems militaries were confronting in complex spaces such as Afghanistan and Iraq. The course went through a subsequent iteration where it proposed "Design Thinking" as a possible approach to dealing with such complexity, and later added a one week exercise which explicitly explored the practicalities of Design through an assigned problem. Subsequently, tutorials were added to assist students in the exercise, but these iterations also served to confuse students as to what the objectives of the course were. The last iteration has sought to reframe the course as an exploration of operations in complex battlespace, but a new approach may be warranted.

Course Evolution
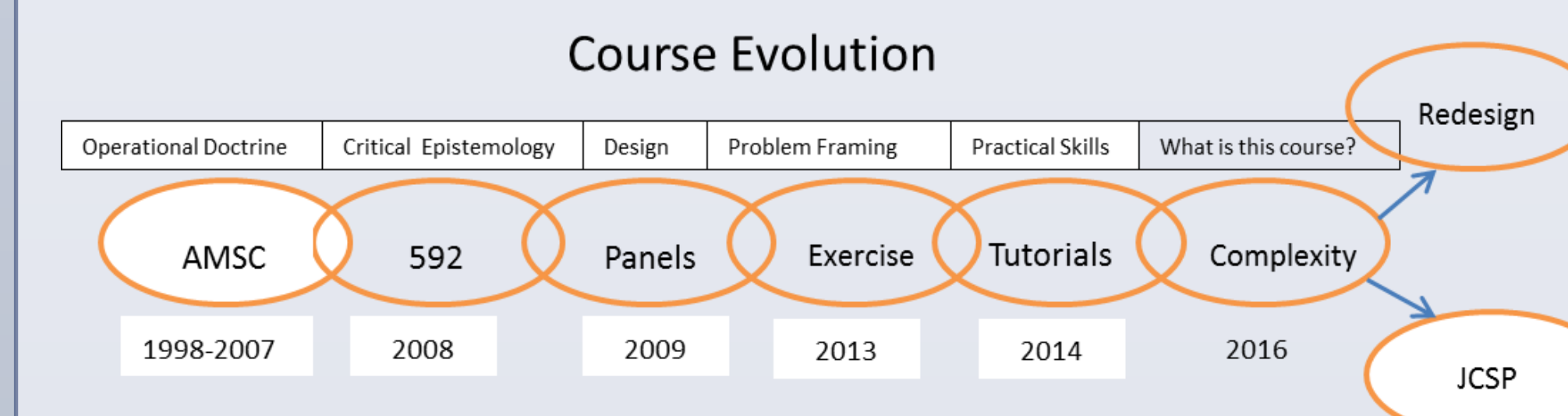
Conclusions

Design has to be approached carefully. Approaches adopted directly from Business School models were unsuccessful in reaching military students, who found them juvenile. The learning objective of exploring the gaps between theory and practice are also experienced in applying design methods in the classroom: design needs to be "endogenized" properly to be appreciated. Secondly, staff capacity represents a significant bottleneck: training programmes for teaching the teacher have yet to be effectively developed, requiring significant SME support for exercises and tutorials. Finally, there are significant differences in students' openess to Design: Majors are less risk adverse and are more open to the approach than Colonels are. It is critical to identify class champions early in the course to help facilitate student learning.
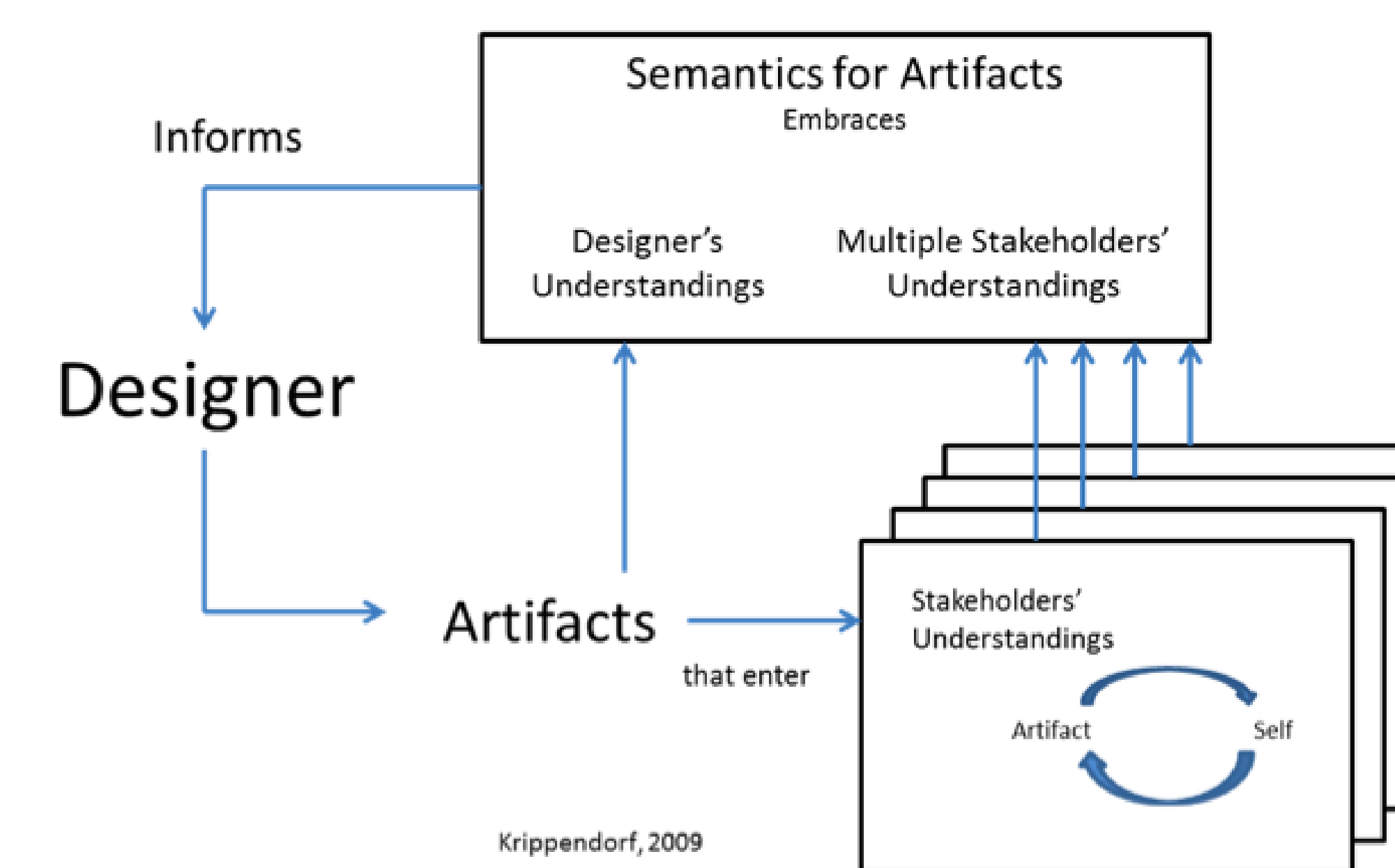
Krippendorf, 2009

References

Klaus Krippendorf, *The Semantic Turn: A New Foundation for Design*, 2006.

Donald A. Schön, *Educating the Reflective Practitioner*, 1987.

Mikkel Rasmussen, *The Risk Society at War*, 2006.

Bent Flyvbjerg, *Making Social Science Matter,* 2001.

M. Ann Welsh; Gordon E. Dehler, "Combining Critical Reflection and Design Thinking to Develop Integrative Learners", *Journal of Management Education,* 37(6) 2012.

Chris Argyris, "Teaching Smart People How to Learn", *Harvard Business Review*, May-June 1991.

Col. Stefan Banach; Alex Ryan, "The Art of Design: A Design Methodology", *Military Review*, March-April 2009.

Maj. Ben Zweibelson, "Seven Design Considerations", *Military Review,* November-December 2012.

T. C. Greenwood; T.X. Hammes, "War Planning for Wicked Problems", *Armed Forces Journal*, December 2009.

Majors discuss their findings with Operational Commander during Exercise Shifting Sands, 2015.

Contact

Dr. Paul T. Mitchell

mitchell@cfc.dnd.ca