ENTREPRENEURSHIP
COMMERCIALISATION AND
INNOVATION CENTRE

THE UNIVERSITY of ADELAIDE

The Australian Army in the 21st century: organisational adaptation to new conditions of military engagement – a complex adaptive system perspective

For the award of Doctor of Philosophy

Thesis submitted by
AMINA OMAROVA

June 2016

Thesis supervisors:
Professor Vernon Ireland and Doctor Barry Elsey

Declaration of Honour

I certify that this work contains no material which has been accepted for the award of any other degree or diploma in my name, in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. In addition, I certify that no part of this work will, in the future, be used in a submission in my name, for any other degree or diploma in any university or other tertiary institution without the prior approval of the University of Adelaide and where applicable, any partner institution responsible for the joint-award of this degree.

I give consent to this copy of my thesis, when deposited in the University Library, being made available for loan and photocopying, subject to the provisions of the Copyright Act 1968.

I also give permission for the digital version of my thesis to be made available on the web, via the University's digital research repository, the Library Search and also through web search engines, unless permission has been granted by the University to restrict access for a period of time.

22 August 2016

To my mother, Alfiya Galiaskarova, for her endless love, faith and support

Посвящается моей маме, Галиаскаровой Альфие Агзамовне, за ее бесконечную *л*юбовь, веру и поддержку

Acknowledgments

A PhD journey is not a lonely endeavour. To reach this point I contacted, collaborated and worked with many people who contributed to the success that I perceive as our common goal.

I am grateful to Professor Vernon Ireland, my principal supervisor, who opened the door to my new life and experience and invited me on a journey into complexity science. I appreciate the support and freedom to study, think and work. His positive attitude always recharged me with optimism.

My special gratitude goes to Dr Barry Elsey, my second supervisor, for being *guide*, *philosopher* and *friend* during the last five years of my life. Through him I have had a lasting experience of adult learning in practice rather than in words. His encouragement and faith helped me grow professionally and believe in myself. His friendship helped me to remember my family and supported me during my pregnancy and the first year of motherhood, gradually transforming me into a mother meanwhile doing my research.

I am glad to have had an opportunity to work with Dr Matthew Richmond who led the research from the DST Group side. His enormous effort guided me through the Australian Defence system and made things possible and partially funded by the DST Group. His knowledge, support and humour made our collaboration enjoyable and productive.

I am thankful to Dr Anne-Marie Grisogono who developed the Conceptual Framework for Adaptation that attracted my attention. This was an intellectually stimulating piece of work that laid the foundation for the whole thesis.

A special gratitude is owed to the DST Group and the Australian Army – it was a true surprise for me to see how open and responsive a semi-closed

organisation can be. I should acknowledge the Australian culture that plays an important part in that openness. I am thankful for the greatest opportunity to meet every interviewee and hope that my understanding of the Australian Army will contribute to its further success.

I also thank Charles Clennell for his deep knowledge of the English language that has helped me to improve my expression in English.

Sometimes work of non-academic people is not obviously seen. But they play no less a role in our success. I am happy to be surrounded by my family friends who have been supporting my journey. I am very thankful to Mrs Kelly Abbas, Dr Elsey's wife, for her patience and love in organising wonderful dinners for us as students and as a family. Without her our collaboration and success would not be possible. My gratitude to all my friends for being proud of me doing this PhD and enabling me to finish.

My endless love and gratitude goes to my family. To my mum who provided the greatest example of love and professional success, who has loved and believed in me all my life and to whom I am obliged for all my achievements. To my husband Nikita my love and thanks for his patience in listening to my ideas and thoughts and his on-going encouragement. His continuing love allows me to find my way in life; his constant desire to move forward keeps me moving forward; his ability to think abstractly helped to advance my ideas. My love, kisses and hugs to my little daughter Sofia who behaved well in my belly during all interviews and contributed to my writing through being a team member of our family. Through her I understood that adaptation is not a pleasant thing, but we are forced to succeed for those we love.

Abstract

Modern military engagements are characterised by complexity, dynamics and unpredictability that force armies as complex social bureaucratic systems to adapt to continuously changing conditions of war. This is an on-going vital matter since modern society has been under stress from recent military engagements in Afghanistan, Iraq, Syria as well as current terrorist attacks in France and Belgium. We are seeking a way to describe and understand from a theoretical perspective both the operational conditions and the process of adaptation that the Australian Army needs to employ in response to external changes of these extreme kinds. In this regard Complex Adaptive System (CAS) theory offers an advanced method of understanding contemporary warfare and military organisations that will represent the core focus of the thesis; its main goal being to appraise organisational change in the Australian Army through the lens of CAS theory.

The literature review on this topic identifies changes in contemporary warfare and characterises both modern military engagements and organisations as complex adaptive systems. Any army representing the defence of a nation state strives to be both capable and effective in its military engagements, most notably in conditions of war or hostilities against a known enemy combatant. The objectives of capability and effectiveness, often understood as *'fit for purpose'*, means that an army must always be in a state of readiness to change, not only to keep abreast of the methods and tools of warfare technology that continuously evolve but ideally to be strategically ahead of the enemy, whether in a classical battleground scenario or, as seems more likely, fighting an opponent who has the advantage of local knowledge, an element of surprise and other features of asymmetrical warfare providing them with the upper hand. Contemporary warfare, as

described in the history books, has already moved beyond our capacity to understand and interpret the nature of conflict. Moreover, the lessons of military engagement for the Australian Army in recent years fighting insurgency in faraway lands point to a new level of complexity where unforeseen and unknown factors play a decisive part in determining success and failure in strategic planning and actual operations. Difficult though it may be, the Army has no choice but to embrace new *'out of the box'* thinking and get to grips with the mysteries of CAS in order to adapt and remain effective. This leads us to the main research question that is:

How does a modern professional army adapt, structurally and functionally, to the changing nature of military engagement, which is increasingly characterised by complexities arising outside of conventional operations?

CAS theory can be seen as a promising perspective in appraising these complexities as it provides a number of characteristics that offer a better understanding of the nature of modern warfare and military organisations. To apply CAS theory to a real-life case of organisational change we have chosen the Conceptual Framework for Adaptation (CFA) since it provides a good descriptive model of CAS. Moreover, CFA, currently being developed by the Defence Science and Technology Group (DST Group) in Australia, is the most familiar framework for the Australian Army in the task of reviewing the complexities of both modern warfare and military organisations. For this reason, the thesis uses CFA as a methodological basis for appraising a case of organisational change. The findings will draw on ideas taken from CAS theory and CFA as a means to appraise organisational change.

From a practical point of view, we have selected a recent case of organisational change that had been introduced into the Australian Army. In particular, in response to future environment complexities, the Australian

Army has released *Adaptive Campaigning* and launched the Adaptive Army Initiative (AAI). This is an ambitious program that puts the whole organisation on an adaptive footing, claiming to be a restructuring of higher command and control arrangements by providing a systemic approach to adaptation across the entire Army. The review of the AAI aims to explore from a theoretical perspective, how the Army as a complex organisation, and given its multiple functions, levels of command and control, can actively manage this adaptation to a continuously changing environment. During the AAI review we conducted 19 face-to-face interviews that included 13 senior Officers, 3 mid-ranking Army Officers and 3 external to the Army people. We also recognise that organisational learning plays a crucial role in the way the Army adapts to external requirements. To cover this ground we conducted a review of the lessons mechanisms, Army Lessons Network (ALN); the focus being on the operational aspects (process, structures and roles) that make an organisation adaptable to changing conditions. Thus, the thesis describes how the change was designed and implemented as well as the outcomes that have been possible to track so far. Appraisal of the lessons processes in the Army, through the ALN review, helps us to understand the role of organisational learning as a mechanism of change. Both the AAI and ALN analyses demonstrate that the Army has developed characteristics of CAS.

Taking into account the views of experienced senior Army Officers about their own self-generated initiative to drive and foster an adaptive, change-oriented culture, the thesis demonstrates the depth of understanding of the challenge of achieving *'fit for purpose'* organisational performance as well as the important contribution of leadership, a supportive socio-culture and the lubrication of organisational learning. This is what the thesis has revealed and its special knowledge contribution is to obtain the insights from Army

leaders as practitioners about what is going on in a modern army in a continuous process of transition. Indeed, gaining access to the thoughts of these truly professional soldiers has provided the thesis with unique and original insights into military operations.

The thesis explores the development of a model of the Army as a complex adaptive system. It acknowledges that in the context of the practical orientation of the Army theory-building this is just the beginning of a long road-testing process. A serious attempt has been made to start the theory-to-practice process with an extensive exploration of leading ideas inspired and drawn from complex system thinking.

Key words: complex adaptive systems (CAS), organisational change, organisational learning, organisational adaptation, Australian Army, Conceptual Framework for Adaptation (CFA), irregular warfare

Table of content

Acknowledgments i

Abstract iii

Table of content vii

List of Figures xi

Abbreviations xiv

Chapter 1 The need for adaptation 1

1.1. Preface 1

1.2. Introduction 2

1.3. Brief historical overview of the Australian Army 5

1.4. Continuous need for adaptation 7

1.5. New conditions of war 9

1.6. Dealing with complexity 13

1.7. How to adapt: adaptation through change and learning 16

1.8. Case study and research questions 18

1.9. Thesis structure 20

Chapter 2 Literature review 23

2.1. Contextual background 28

2.1.1. External environment 29

2.1.2. Internal characteristics – a military organisation 47

2.2. Need for adaptation 62

2.3. Changes in Military Forces 64

2.3.1. Known cases of change and adaptation 65

2.3.2. Australian Army 70

2.4. Academic literature that explains organisational change and adaptation 80

2.4.1. Theories of Organisational Change and CAS 83

2.4.2. CAS and Military Organisations 88

2.4.3. Organisational adaptation, organisational learning and Systems Thinking 92

2.5. Model of organisational adaptability 97

2.5.1. What is adaptation? 100

2.5.2. Generic model of adaptation or adaptive cycle 102

2.5.3. Link to the Huber's model of organisational learning 110

2.5.4. Characteristics of adaptation/learning cycle 114

2.5.5. Scales of adaptation 117

2.5.6. Classes of adaptation 118

2.5.7. Levels of adaptation 122

2.5.8. Levels and classes of adaptation 126

2.6. Literature review summary 129

Chapter 3 Research methodology 131

3.1. Practical aspects of the research 132

3.1.1. Ethical consideration 133

3.1.2. A review of the AAI 135

3.1.3. Army Lessons Network (ALN) 142

3.2. Philosophical ground 151

3.2.1. Ontology and epistemology of the research 152

3.2.2. Research methods: a case study approach 155

3.3. Research Limitations 156

Chapter 4 Data analysis 158

4.1. The process of data analysis – AAI interviews 160

4.2. The case of organisational change: AAI 163

4.2.1. Sense or initiating the change *(Themes 19-21)* 164

4.2.2. Analyse and Decide *(Themes 1-6)* 169

4.2.3. Adapt *(Themes 7-11)* 173

4.2.4. Sense or collecting feedback about change *(Themes 12-18)* 177

4.3. General characteristics of organisational adaptability in the Australian Army 185

4.3.1. Classes and levels of adaptation *(Theme 22)* 187

4.3.2. Organisational learning *(Theme 23)* 196

4.3.3. Feedback mechanisms in the Army *(Theme 24)* 201

4.3.4. Preparing for the future *(Themes 25, 27-30)* 204

4.3.5. Adaptability of the Army *(Theme 26)* 218

4.4. Processes of organisational learning (ALN case study) 221

4.4.1. Process Models and Initial Gap Analysis 222

4.4.2. Stakeholder Input 223

4.4.3. Evidence in support of issues: historical data analysis 223

4.4.4. Evidence in support of issues: cultural perspective 227

4.4.5. Synthesis of the ALN analysis 228

4.4.6. Summary of the ALN review 230

4.5. Synthesis of data analysis 231

4.6. Summary of data analysis 241

Chapter 5 Discussion and conclusion 244

5.1. Summary of the whole research 246

5.2. Answering research questions 249

5.3. Knowledge contribution 252

5.3.1. Adding knowledge to CAS theory 252

5.3.2. Adding knowledge to the CFA model 256

5.3.3. What defines an adaptive army? 264

5.4. Limitations 266

5.5. Further research directions 267

References 273

Appendices 288

5.6. Appendix A. Ethics approvals 288

5.7. Appendix B. AAI Interview questions 294

5.8. Appendix C. Designed and as-is view of the learning processes in the Australian Army 298

5.9. Appendix D. Results of SWOT workshops 304

5.10. Appendix E. TOWS results 314

List of Figures

Figure 1. Chapter 2 structure 25

Figure 2. Aspects of the military engagements 29

Figure 3. Conditions of the global security environment 30

Figure 4. Operational environment (conventional vs complex) 46

Figure 5. Military Organisation – mechanic vs organic 48

Figure 6. A military organisation 55

Figure 7. Organisational change overview 65

Figure 8. The Learning Loops (Breen 2014) 78

Figure 9. Force Generation Cycle (Our future: Army Modernisation Update 2014) 79

Figure 10. Structure of the academic literature review 82

Figure 11. Main Directions of OCT. Modified Source: (Demers 2008). 85

Figure 12. Description of the CFA and its practical application 98

Figure 13. Learning cycle (Act-Sense-Decide-Adapt) 105

Figure 14. Main aspects of Step 1 – Sense 108

Figure 15. Main aspects of Step 2&3 – Analyse and Decide 109

Figure 16. Main aspects of Step 4 – Adapt 110

Figure 17. Characteristics of adaptation/learning cycle 116

Figure 18. Objective function and classes of adaptation as a supporting infrastructure. 120

Figure 19: Levels of adaptation 125

Figure 20. CFA components 128

Figure 21. Structure of the Research Methodology chapter 132

Figure 22. AAI sample 138

Figure 23. ALN Review Process 144

Figure 24. Synthesis of analysis 150

Figure 25. Data analysis structure 159

Figure 26. Interview themes 162

Figure 27. A particular case of organisational adaptation – CFA perspective, ASDA loop 164

Figure 28. Discussion of general characteristics of organisational adaptability in the Australian Army 186

Figure 29. Describing cases of levels and classes of adaptation 188

Figure 30. Organisational learning in the Army 197

Figure 31. Feedback mechanisms in the Army. 202

Figure 32. Discussion on areas to focus for preparing for the future 206

Figure 33. Organisational adaptability in the Army 218

Figure 34. Distribution of Lessons data by FIC 225

Figure 35. Distribution of Lessons data by Data Source 225

Figure 36. Distribution of Lessons data by Decision Loop 226

Figure 37. Distribution of Lessons data by Classes of Adaptation 226

Figure 38. Distribution of Lessons data by Levels of Adaptation 226

Figure 39. Distribution of Lessons data by Levels and Classes of Adaptation 227

Figure 40. Structure of the Chapter 5 245

Figure 41. Colony of ants 252

Figure 42. Social CAS characteristics 255

Figure 43. IBM business model 270

Abbreviations

AAI	Adaptive Army Initiative
ABCA Program	American, British, Canadian, Australian and New Zealand Armies' Program
ACMS	Army Capability Management System
ADF	Australian Defence Forces
ADO	Australian Defence Organisation
AIF	Australian Imperial Force
ALE	Army Learning Environment
ALIAS	Army Lessons and Insights Analysis System
ALN	Army Lessons Network
ALO	Army learning organisation
ANAO	Australian National Audit Office
ANZAC	Australian and New Zealand Army Corps
Army HQ	Army Headquarters
ASDA	Act – Sense – Decide – Adapt
ATC	Army Training Continuum
AWB	Adaptive Warfare Branch
BRIG	Brigadier
C2	Command and control
CA	Chief of Army
CAL	Centre for Amy Lessons
CAS	Complex Adaptive System
CDG	Capability Development Group
CFA	Conceptual Framework for Adaptation
COL	Colonel

CT	Complexity Theory
DG PERS	Director-General Personnel—Army
DGSP-A	Director General Strategic Planning – Army
DI(A)	Defence Instructions – Army
DMO	Defence Materiel Organisation
DST Group	Defence Science and Technology Group
ELF	Enhanced Land Force
FIC	Fundamental Inputs to Capability
FORGEN	Force Generation
GFC	Global Financial Crisis
HMSP-A	Head of Modernisation and Strategic Planning - Army
HNA	Hardened and Networked Army
HQ FROCOMD	Headquarters Forces Command
HQ JOC	Headquarters Joint Operations
ILL	Immediate learning loop
LCBB	Land Capability Battle-worthiness Board
LLL	Long learning loop
LTCOL	Lieutenant Colonel
LTGEN	Lieutenant General
MAJGEN	Major General
MLL	Medium learning loop
NCW	Network Centric Warfare
OODA	Observe – Orient – Decide – Act
SCS	Soldier combat system
SLL	Short learning loop
STS	Sociotechnical systems

SWOT	Strengths – Weaknesses – Opportunities – Threats
TOR	Terms of Reference
TOWS	Threats – Opportunities – Weaknesses – Strengths
AIF	Australian Imperial Force