The Science of the Indirect Approach in Modern War. Resurrection of an Art forgotten?

July 2017

2218436C

63122895

Presented in partial fulfilment of the requirements for the

Degree of

MSc International Security, Intelligence and Strategic Studies

Word Count: 21743 words [Prologue to Epilogue, including footnotes]

Supervisors: Assistant Professor Dr. Jan Ludvik, Lecturer Dr. Mathilde Von Bulow

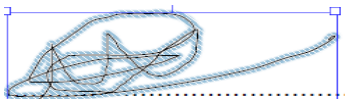
MSc International Security, Intelligence and Strategic Studies 2015/2016

Dissertation Archive Permission Form

I give the School of Social and Political Sciences, University of Glasgow permission to archive an e-copy/hard copy of my MSc dissertation in a publicly available folder and to use it for educational purposes in the future.

Student Name (BLOCK LETTERS) CHRISTODOULIDES NIKOLAS

Student Number: 2218436C

Student Signature:  **Date: 20/07/2017**

PLEASE RETURN FORM TO:

The SECINTEL Postgraduate Studies Administrator when you submit your dissertation

University of Glasgow

Declaration of Originality Form

This form **must** be completed and signed and submitted with all assignments.

Please complete the information below (using BLOCK CAPITALS).

Name: NIKOLAS CHRISTODOULIDES

Student Number: 2218436C

Course Name: MSc INTERNATIONAL SECURITY, INTELLIGENCE AND STRATEGIC STUDIES

Assignment Number/Name: THE SCIENCE OF THE INDIRECT APPROACH IN MODERN WAR. RESURRECTION OF AN ART FORGOTTEN?

An extract from the University's Statement on Plagiarism is provided overleaf. Please read carefully THEN read and sign the declaration below.

I confirm that this assignment is my own work and that I have:

Read and understood the guidance on plagiarism in the Undergraduate Handbook, including the University of Glasgow Statement on Plagiarism	√
Clearly referenced, in both the text and the bibliography or references, **all sources** used in the work	√

Fully referenced (including page numbers) and used inverted commas for **all text quoted** from books, journals, web etc. (Please check the section on referencing in the 'Guide to Writing Essays & Reports' appendix of the Graduate School Research Training Programme handbook.) √

Provided the sources for all tables, figures, data etc. that are not my own work √

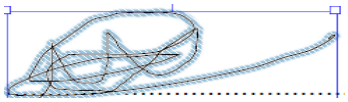
Not made use of the work of any other student(s) past or present without acknowledgement. This includes any of my own work, that has been previously, or concurrently, submitted for assessment, either at this or any other educational institution, including school (see overleaf at 31.2) √

Not sought or used the services of any professional agencies to produce this work √

In addition, I understand that any false claim in respect of this work will result in disciplinary action in accordance with University regulations √

DECLARATION:

I am aware of and understand the University's policy on plagiarism and I certify that this assignment is my own work**,** except where indicated by referencing, and that I have followed the good academic practices noted above

Signed  .....

The University of Glasgow Plagiarism Statement

The following is an extract from the University of Glasgow Plagiarism Statement. The full statement can be found in the University Calendar at http://senate.gla.ac.uk/calendar/current/02-feesandgeneral.pdf#page=56&view=fitH,670.

This should be read in conjunction with the discipline specific guidance provided in the Graduate School Research Training Programme handbook.

31.1 The University's degrees and other academic awards are given in recognition of a student's **personal achievement**. All work submitted by students for assessment is accepted on the understanding that it is the student's own effort.

31.2 Plagiarism is defined as the submission or presentation of work, in any form, which is not one's own, without **acknowledgement of the sources**. Plagiarism includes inappropriate collaboration with others. Special cases of plagiarism can arise from a student using his or her own previous work (termed auto-plagiarism or self-plagiarism). Auto-plagiarism includes using work that has already been submitted for assessment at this University or for any other academic award.

31.3 The incorporation of material without formal and proper acknowledgement (even with no deliberate intent to cheat) can constitute plagiarism.

Work may be considered to be plagiarized if it consists of:

- a direct quotation;
- a close paraphrase;
- an unacknowledged summary of a source;
- direct copying or transcription.
-

With regard to essays, reports and dissertations, the rule is: if information **or ideas** are obtained from any source, that source must be acknowledged according to the appropriate convention in that discipline; and **any direct**

quotation must be placed in quotation marks and the source cited immediately. Any failure to acknowledge adequately or to cite properly other sources in submitted work is plagiarism. Under examination conditions, material learnt by rote or close paraphrase will be expected to follow the usual rules of reference citation otherwise it will be considered as plagiarism. Schools should provide guidance on other appropriate use of references in examination conditions.

31.4 Plagiarism is considered to be an act of fraudulence and an offence against University discipline. Alleged plagiarism, at whatever stage of a student's studies, whether before or after graduation, will be investigated and dealt with appropriately by the University.

31.5 The University reserves the right to use plagiarism detection systems, which may be externally based, in the interests of improving academic standards when assessing student work.

If you are still unsure or unclear about what plagiarism is or need advice on how to avoid it,

SEEK HELP NOW!

You can contact any one of the following for assistance:

Lecturer
Course Co-ordinator
Dissertation Supervisor
Postgraduate Adviser of Studies
Student Learning Service

ACKNOWLEDGEMENTS

This research project was made possible only as a result of the support provided by many people to whom I am deeply grateful. I would like to acknowledge my sincere thanks to the following people:

- Assistant Professor Dr. Jan Ludvik (Supervisor from Charles University of Prague) for his time and perseverance in guiding me through this thesis. Thank you for assisting me in clarifying my research aims and objectives.

- Lecturer Dr. Mathilde Von Bulow (Supervisor from University of Glasgow) for her patience and guidance. Thank you for providing me with the right questions and all the places in which to look for answers.

- All the professors from University of Glasgow, OTH Regensburg and Charles University of Glasgow. This thesis came as a result of the intellectual zymosis that followed your classes and your teachings.

- To all those that have inspired me throughout my life and most importantly, to those who have taught me that the answer to the question: "why do we fall down?" is "to get back up".

TABLE OF CONTENTS

ABBREVIATIONS

IA	Indirect Approach
OODA	Observe-Orient-Decide-Attack
RC	Reflexive Control
HFT	High Frequency Trading

The Science of the Indirect Approach in Modern War. Resurrection of an Art forgotten?

PROLOGUE

Previous to my successful enrollment in this post-graduate programme, I had the opportunity of studying Business Administration as an undergraduate student. Besides learning about finance, accounting and marketing, all our professors were always straining to instill to us that the most important element of an enterprise are its people. Start-up business taking smart decisions could become giants in the international arena of commerce within very short periods of time whereas giant enterprises could very easily file for bankruptcy despite all their financial prowess. It was a paradox left insolvent to my curious mind until I came across the same phenomenon in the conduct of warfare, during this post-graduate programme. History offered many examples in which great armies, technologically and logistically superior were defeated by smaller and inferior opponents. As such, my interest in studying this paradox grew exponentially due to the fact that I come from a very small country, Cyprus which has been in conflict with a superior adversary, Turkey, for almost half a century now.

Could it be possible that my country's national problem be solved through the application of this Indirect Approach method, if the situation ever evolved from a political confrontation into a military one? Whilst it would require a number of hypotheses to materialize in order to view the practical result of this scenario, the Indirect Approach theory remains a science that will definitely re-emerge in the modern battlefields of the 21st century, most likely as the favorite method of adversaries with an unequal access to resources and different cultural idiosyncrasies. It should be noted though that the Indirect Approach theory can also be applied successfully by states that are technologically superior, only when these states come to realize the full potential that the Indirect Approach theory holds. Only through a critical analysis of the Indirect Approach theory, we can result in comprehending holistically the Indirect Approach theory and thus applying it successfully in modern battlefields.

- CHAPTER 1 -
INTRODUCTION

Failure is the key to success;

Each mistake teaches us something.

(Morihei Ueshiba, 1992, The Art of Peace, p. 87)

1.1 Background

Despite of all the technological prowess that we have managed to accumulate, we continue to treat war foolhardily as a trade rather than as a science. The consequences of forgetting the answer to the question of whether war is a trade or a science, is succumbing us in a repetitive mode of failure. (Maurice De Saxe, 1757, p. 29) The trend of technological evolution being chained to the science of war has subjected our minds into the condition of 'target fixation'. Target fixation regards to the phenomenon in which an individual or a group of people, become so focused on an observed object that they inadvertently increase their chances of colliding with the object. (Cummins, 2013) In a parallel line of thought, the phenomenon of target fixation is responsible for the friction and the inertia that is observed whenever a new concept of conducting warfare emerges in military affairs.

The emergence of the Indirect Approach theory cannot be specified with chronological accuracy as it is a concept that has not been analyzed through the scientific way, thus allowing historians to successfully categorize events as those that fall or not under the method of the IA theory. As a result of the lack of a scientific approach to the method of the IA theory, this research will both introduce and deconstruct the concept of the IA theory through both an academic and theoretical reasoning perspective.

Liddell Hart, later renowned as the father of the IA theory, had come to the advent of the IA concept after a diligent examination of war's "elementary principles drawn from the sum of human experience in all times." (Hart, 1944, p. 90) Hart was appalled from the strategic and tactical stalemates that he had observed during WWI. Hart did not provide an exact definition of the IA theory, but the closest to a definition of the IA theory, lies in the preface of his book 'The Way to Win Wars', published in 1941 in which he stated that: "In commerce, the suggestion that there is a deal to be secured is far more potent than any direct appeal to buy. And in any sphere, it is proverbial that the surest way of gaining a superior's acceptance of a new idea is to persuade him that it is his idea! As in war, the aim is to weaken resistance before attempting to overcome it; and the effect is best attained by drawing the other party out of his defenses." (pp. 5-6)

As Hart commented later in the same book, at the heart of the IA theory lie two basic principles, dislocation and exploitation. For success on the battlefield, these two principles are to be used consecutively. In Hart's own words: "One precedes and one follows the actual blow, which in comparison is a simple act. You cannot hit the enemy with effect unless you have first created the opportunity; you cannot make that effect decisive unless you exploit the second opportunity that comes before he can recover." (1941, pp. 180) In essence, the IA theory suggests the opposite than the generally accepted belief of success being the sum of accidental events. It is the opportunities that an entity creates and the exploitation of these opportunities that lead to success. Finally, the IA theory comes in parallel with the notion of exploitation of asymmetric outcomes, which Taleb (2007, p. 210) defines as "I will never get to know the unknown since, by definition, it is unknown. However, I can always guess how it might affect me, and I should base my decisions around that."

Hart's IA theory came under scrutiny on the other hand because it was not produced through the scientific route. This unscientific approach towards the IA theory has been confirmed by Freedman's statement regarding Hart's positioning on the subject of the IA, for which Freedman stated that: "Unfortunately, his approach to

history was intuitive and eclectic rather than, as he liked to believe, scientific." (2013, ch.11, p. 138) Another of Hart's critics, Bond (1976, p. 56) commented on the same subject stating that: "Liddell Hart came extremely close to a circular argument: by his definition, a decisive victory was an event which is secured by an indirect approach." Freedman (2013, ch.11, p. 134-139) also remarked on this when he stressed Hart's rigidity as a result of the way Hart approached the subject of the IA theory.

This research intends to permeate the IA theory through the employment of three different theories, Chaos theory, OODA Loop theory and Reflexive Control theory. Since first encountering the IA theory, I became preoccupied in discovering the academic tools and techniques that would allow me to unravel the inner mechanisms of the IA theory. Hart's books on the specific subject were saturated with philosophy, making the IA theory much more difficult to comprehend in depth. On the other hand, a good grasp of human psychology seemed a possible key for deciphering Hart's work on the IA theory, basically because Hart emphasized the importance of human factor in the conduct of warfare. Researching more on the IA theory, I came upon the discoveries of the three theories, mentioned above. Chapter three that examines T.E Lawrence's Arab Revolt and chapter four that examines Wingate's expeditions in Sudan, Palestine, Ethiopia and Burma were chosen because they depicted exactly the utilization of the IA theory through the combination of Chaos theory, OODA Loop theory and Reflexive Control theory.

1.2 Research Aim and Intentions

The central aim of this research divides in two parts. The first part is devoted in showing that the IA theory's two basic maxims, dislocation and exploitation are attained through the practice of Chaos theory, OODA theory and Reflexive Control theory. The second part is devoted to showing that the IA theory is the most appropriate method in reaching equilibrium of force, a state that guarantees the non-continuation of war between conflicting parties. However, the degree of simplicity that this central aim might suggest, shadows the supplementary intentions of this

research project which are the demonstration of IA theory's practical utilization and efficacy in past and future asymmetric or not, environments.

In one of Hart's last works, in which he approached war from a philosophical perspective, Hart remarked that history illustrated, that complete and lasting victory has never been achieved. (1971, p. 83) On the contrary, one's victory is one's loss and this process has always led to further continuation of the phenomenon of war. Smith (2005, p. 284), concentrated on providing an answer to this problem, practically invented the term: 'equilibrium of force'. Equilibrium of force is a term parallel to the one used in the field of physics. In physics, a state of equilibrium suggests that the sum of all forces, each force being a vector, is zero. In order then to attain equilibrium of force in war, one must previously take into account and try to predict how all physical and non-physical features of a phenomenon such as war will conduct with each other. Once again, laws of physics cannot be escaped. "As Newton's third law of motion puts it, 'For every action there is an equal and opposite reaction.' (Thornton, 2007, p. 23) The IA theory offers the ability of taking a much more holistic approach to the phenomenon of war. The lack of this holistic approach might be the crucial element that will help attain a faster elimination of war's consequences and ultimately, the non-continuation of war.

1.3 Theoretical Hypotheses

1. Are the principles of dislocation and exploitation yielded by the synergy of Chaos theory, OODA theory and Reflexive Control theory?

2. Can the idea of victory be fractal to the concept of the state of equilibrium?

1.4 Value of this Research

Despite modern society's inclination towards the plannable, the accumulated history of humanity, proves Heraclitus comment that "τὰ πάντα ῥεῖ καὶ οὐδὲν μένει" (everything is in constant flow and nothing stand stills) (Heraclitus, 2010 edition, p. 45) is closer to being a law than a mere observation. What does then, this

research has to offer to its reader? To whom this research can be found valuable and why is it important?

Firstly, an opportunity to examine the IA theory from a completely different perspective, that encompasses concepts drawn from such a broad background that involves history, physics, mathematics, psychology and philosophy. This research does not only try to deconstruct the IA theory into its core mechanisms, but it also tries to prove that the theory is practically feasible and efficacious in modern battlefields. In the interminable quest of the perfect formula in the conduct of warfare, the IA theory might be the finest prize that has simply been excursed on the grounds of incomprehensibility. Coming to the second part of the question set above, this research, will be found valuable especially to people with military backgrounds, because as insofar, no other research has investigated the synergistic relationship between Chaos theory, OODA Loop theory and Reflexive Control theory.

On the other hand, this research will provide business executives with food for thought as many of the theories that will be used for deconstructing the IA theory can be applied with few alterations in the business environment. Finally, the value of this research remains critical because of the fluidity that modern battlefields present at the tactical, operational and strategic level. The nature of recent and most likely future conflicts is asymmetrical. Limitations set on physical resources necessitate a change in thinking about their effective utilization. While historical evidence illustrate that the IA theory has not been used at such a great extent in environments of asymmetrical nature, its employment in asymmetric environments is possibly the most promising recipe for a successful result due to the IA's compatibility with asymmetrical thinking.

1.5 Conceptual Approach

As it has been mentioned above, the two principles of the IA theory are dislocation and exploitation. The theories of Chaos, OODA Loop and of Reflexive Control were exactly chosen because when they are used in conjunction, they produce the maxims of dislocation and exploitation. Early mathematicians had concluded that

it was unable to discover a formula that would enable them to explain scientifically the system of how the world or even specific mechanisms of the world work. Nonetheless, scientists from other fields, such as biology and meteorology, were at the same time discovering repetitive patterns in the mechanisms of the dynamical systems that they were observing. As a result, mathematicians were later able to conclude that despite the fact that the world was chaotic in principle, certain patterns were recurring randomly throughout time. In this sense, while it was able to predict that certain patterns could materialize again under certain circumstances, it still remained unable to predict when these patterns were to occur. Conclusively, chaos theory suggested that chaos was after all, decipherable. Subsequently, the only limit that was set for an accurate decoding of chaos was the variable of time.

Unless a time machine was invented, it would remain unable to predict when certain events would materialize, even though it was in our knowledge that these events would eventually occur. A partial solution to this problem came from the financial trading world and it is known as HFT, which stands for High Frequency Trading. The main idea behind HFT is to use clever algorithms and super-fast computers to detect and exploit market movements. There are two main strategies that HFT investors utilize. The utilization of the first strategy pertains that institutional investors avoid signaling their intentions to the market by trading large orders of stocks and other financial products in small blocks and within specified price ranges. By sending out a stream of probing quotes that are swiftly cancelled until they elicit a response, high-frequency traders uncover how much an investor is willing to pay or sell. Then traders buy the targeted stock ahead of the investor, offering it to them a fraction of a second later for a tiny profit. (The Economist, 2009)

The second HFT strategy employed is that of collecting rebates that exchanges offer to liquidity providers. High-frequency traders will quickly outbid investors before immediately selling the shares to the investor at the slightly higher purchase price, collecting a rebate of one-quarter of a cent on both trades. High-frequency traders

may execute 1,000 trades per second. Computers allow traders to process trades in less than 500 microseconds (millionths of a second). (The Economist, 2009)

For the purposes of this research though, it is not the close resemblance between the actual strategies of HFT and the IA theory's two basic principles, dislocation and exploitation that interests us. This research though concentrates on how high frequency traders manipulate time in such a way that they transform the variable of time into an ally instead of an opponent. High frequency traders understand two things, that they cannot beat time and that they cannot decipher chaos. What they understand though is that if they become faster in their decision-making process, time will be their ally in the fight against their investors. First, they ambush their investors by learning their intentions and secondly, they manipulate investors into taking decisions that the traders themselves have already set up as options.

The schemes of firstly setting a mental ambush for your adversary by utilizing time and specifically a faster decision-making process and secondly, offering your adversary options that you have already pre-selected and are towards your interest, is exactly the principal idea behind the synergy produced by the theories of Chaos, OODA Loop and Reflexive Control.

1.6 Methodological Approach

Primary research method that will be used for completion of this research project will be that of the case study and most specifically, through the use of the comparative historical research method. The case studies which will be investigated in the scope of this research concern Lawrence's Arab Revolt and Wingate's expeditions in Sudan, Palestine, Ethiopia and Burma. In these two chapters, through the method of comparative historical research and besides the documentation of particular events that are linked directly to the three deconstructing theories, this research will evaluate how these three theories have synergistically resulted in the formulation and application of the IA theory. The reason that these two case studies have been included in this research is not because they exhibit the most accurate historical evidence of the IA theory being into practice. The actual reason that these

case studies were chosen was because of the leading figures, Lawrence of Arabia and Orde Wingate. Both characters were inspirers of the IA theory and this is depicted clearly in their legacy of writing which clearly illustrates their insightful thinking on the subject. More than theorists of the IA, both Lawrence and Wingate had the opportunity to practice the method of the IA theory and provide us with a multitude of examples of how and when this approach should be utilized. Most importantly though, both Lawrence and Wingate had practiced the IA theory, instinctively through the combination of Chaos theory, the OODA Loop theory and the Reflexive Control theory.

Additionally, the comparative historical research method, comprised by three stages (Mahoney and Rueschemeyer, 2003, pp. 11-13) remains the most suitable technique for analyzing the case studies and the IA theory. Firstly, comparative historical inquiry is fundamentally concerned with explanation and the identification of causal configurations that produce major outcomes of interest. Secondly, comparative historical researchers explicitly analyze historical sequences and take seriously the unfolding of processes over time, which in this case is necessary as the three deconstructing theories need to be serially utilized in order to produce the desired outcome. Finally, practitioners of comparative historical inquiry engage in systematic and contextualized comparisons of similar and contrasting cases. Both cases and especially the thinking processes of the two leading figures of the cases, offer many similarities which would have been unable to be identified without the use of the comparative historical analysis method.

1.7 Thesis Organization and Outline

PROLOGUE

CHAPTER 1	INTRODUCTION
CHAPTER 2	LITERATURE REVIEW
CHAPTER 3	CASE STUDY – T.E LAWRENCE AND THE ARAB REVOLT
CHAPTER 4	CASE STUDY – WINGATE'S EXPEDITIONS IN SUDAN, PALESTINE, ETHIOPIA AND BURMA
CHAPTER 5	ANALYSIS OF THE INDIRECT APPROACH THEORY AS THE SYNERGISTIC RESULT OF CHAOS THEORY, OODA LOOP THEORY AND REFLEXIVE CONTROL THEORY
CHAPTER 6	EPILOGUE

BIBLIOGRAPHY

- CHAPTER 2 -
LITERATURE REVIEW

The important thing is not to stop questioning. Curiosity has its own reason for existing.

(Albert Einstein to William Miller, 1955, as quoted in LIFE magazine, Vol. 38. p. 64)

Although a substantial amount of research has been conducted on the theories of the Indirect Approach, Chaos, Reflexive Control and the OODA Loop, no research was found of exploring the possibilities of arising synergies between these theories. The only exemption though is that in which Greene (2007, par. 8) makes in his article called 'OODA and You' chaos theory to the OODA loop. Greene argues that chaos could be used as a weapon if it is funnelled in the decision-making process of the opponent thus paralyzing the opponent's reactions. It is the ellipsis of synthesis between the above-mentioned theories that this research has diagnosed as a promising field for research. Nonetheless, as Conant (1964, p. 31) quotes in his book 'Two Modes of Thought', "Without a combination, science does not progress." It is by combining these three theories that this research will seek to accomplish its aims and intentions, set in the previous chapter.

2.1 The Indirect Approach Theory

Since Liddell Hart's original study of the IA theory, in his 1929 book, titled 'The Strategy of Indirect Approach', many practitioners of war, academics and politicians, have invested their time in critically assessing the efficiency of Hart's theory.

Smith, an experienced practitioner of war, concluded that: "The essence of the practise of war is to achieve an asymmetric advantage over one's opponent." (2005, p. 373) Smith basically argues that if you are unable or unwilling to change your own parameters so as to regain the advantage, then you are forced to fight your

adversary on the terms and conditions that he has set. (2005, p. 373) Smith's reference to the maxim of dislocation, depicts a thorough understanding of the importance of setting your opponent in a controlled environment. Ueshiba, the Japanese creator of the martial art of Aikido also noted the importance of this concept by stating that: "Even the most powerful human being has a limited sphere of strength. Draw him outside of that sphere and into your own, and his strength will dissipate." (1992, p. 101) Both Smith and Ueshiba converge with Hart's fifth and sixth axioms of the IA theory, which state that you must "take a line of operation which offers alternative objectives" and always ensure "that both plan and dispositions are flexible-adaptable to circumstances." (1929, ch. 12, pp. 179-180)

Another observer of Hart's IA theory, Atkinson besides exploring the diachronic value of Hart's two main concepts, continues in exploring the technological aspects of warfare and the psycho-political effects of a conflict. (1965, pp. 161-163) He also acknowledges that the importance of Hart's literary works, lies behind the enduring value of Hart's works, as they seem to pervade most of the issues of warfare that trouble us today. (Atkinson, 1965, p. 163) In order to attain a deeper understanding of the significance of Hart's IA theory, we must comprehend how Hart came to the inception of the IA theory. Larson (1980, p. 70) offers a clear description of how Hart came to be an apostle of the concept of limited war. The phenomenon of absolute war had emerged and established itself as the primary method of conducting warfare in Europe, through the submission of military thinkers and practitioners of war to Clausewitz's book 'On War', and the maxims that it professed. Clausewitz had accepted that battlefield success was the sole objective of war which in return resulted to European military thinking transitioning to the kind of attrition's war. (Larson, 1980, p. 70)

However, the conduct of both World Wars had assisted Hart in realizing that the concept of absolute war, portrayed a false relationship between the objectives of war and the objectives of policy. Instead of war being a continuation of politics, the concept of absolute war had reversed this relationship into politics being driven by

the phenomenon of war. This is also depicted in the first and second axioms of Hart's IA theory which state that you must firstly, keep your object always in mind and secondly, ensure the adjustment of your end to your means. (1929, ch. 12, pp. 179) Since the objective of war was then to change the enemy's will at the lowest cost, Hart concluded that seeking decision in battle, where the enemy's resistance was of the greatest magnitude, was deficient. (Larson, 1980, p. 71) Following this line of thought, Hart concluded that an attack to dislocate the thinking and psychological systems of the enemy, would have been much more efficient, both in terms of cost and time. Hart's conclusion was also close to Fuller's earlier analogy of the brain controlling the body, which called for attacks on enemy's communications and command centres. (Freedman, 2013, p. 134) Furthermore, Freedman stated that Hart's IA theory was guided by Sun Tzu's military thinking, and especially with the latter's statement of: "The perfection of strategy would be, therefore, to produce a decision without any serious fighting." (Freedman, 2013, p. 137) Axioms three and four, stating that you must choose the line of least expectation and exploit the line of least expectation also complied to Sun Tzu's main concepts. (Hart, 1929, ch. 12, pp. 179)

Because of Hart's failure to approach the IA theory primarily from a scientific perspective, this lead to the creation of confusion, especially among his critics. For example, Freedman (2013, p. 138) remarks that as they were always elements of subtlety, surprise, or innovation in military victories during the course of history, the concept of indirectness could be either strategic, tactical, psychological or even sometimes unconscious. On the other hand, the majority of polemics of Hart's IA theory have produced responses that transcend the original framework of the debate set by Hart. Such an example is Barnett's (1999, pp. 62-63) argument that Hart approached war as a bloodless game of skill, rather than what war really was. Furthermore, Barnett argued that in both literary works of Hart, concerning the World Wars, there is no depiction of understanding any of the technological and industrial basis that is required for a war to be preserved, while at the same time he concurs with Fuller's description of the IA strategy as the strategy of evasion. (Barnett, 1999, p.62) Another point that was made in support of the IA's invalidity

was that Liddell Hart's IA theory was too vague, also described as a theory of everything. Hart himself was accused of not being one of those "empiricists that search more diligently, and with the greatest effort, in exactly those places where it seems most likely that we can prove our theories wrong." (Barnett, 1999, p.62) That is why Hart was indicted of falling into the an intellectually recursive trap of his own making.

While Barnett's criticism is correct, he seems to have failed in acknowledging the bigger picture behind Hart's ingenuity. Hart did not focus on the logistical, technological and industrial issues that a war required because he considered these, granted, as the technological prowess that the world had experienced in the past century was a constant variable in the greater equation of conducting warfare. While Hart perceived himself as a military strategist and thinker, Barnett is misguided probably by his own predispositions on material versus immaterial variables, thus positioning himself against Hart's fertile thinking of new strategies that can help economize and revolutionize the conduct of war. Thus, from a critical perspective, Barnett is left estranged in contemplating issues of secondary value to the conduct of warfare. This point is stressed by Freedman which divides the application of the IA's theory two maxims in the physical and the psychological spheres. In the physical sphere, avoiding battle required upsetting the enemy's dispositions by means of a sudden change of front such as separating enemy forces, endangering supplies, menacing routes of retreat, or combining several of these moves. On the other hand, in the psychological sphere, dislocation instructed that these physical effects be impressed on the commander's mind, creating an illusionary sense of entrapment. (Freedman, 2013, p. 137)

Another important point is the fact that the advocates of Hart's IA theory criticise the practicality and the efficacy of Hart's theory on the battlefield. Whereas on the other hand, Hart's critics focus more on the theoretical realm of his theory and also on the process by which Hart came to producing the IA theory. Despite the accusations of Hart's theory being inapplicable, Lawrence commented on Hart and

his knowledge that: “He lives for the avoidance of battle and murder, and for winning campaigns by wise dispositions. Yet he is not a philosopher: all his knowledge applies itself.” (1933, p. 907) As for the practical application of Hart’s knowledge, the most successful military commanders of the state of Israel would undeniably support Lawrence’s assertion. (Bond, 1976, pp. 83-89)

2.2 The Indirect Approach and the connection with Chaos theory

“…the freaks of chance are not determinable by calculation.”

(Thucydides, 431 B.C., The Peloponnesian War, Book I, 1.84-[3])

Greek historian Polybius commented on the importance of unpredictability in ancient battlefields, assigning it to nature which simply ". . . makes a single trivial error sufficient to cause failure in a design, but correctness in every detail barely enough for success." (Culham, 1989, p. 192) Clausewitz also (1832, pp. 65-69) denoted a small chapter on the friction of war, commenting that the accumulation of difficulties in the conduct of warfare, produce a kind of friction that is inconceivable unless somebody experiences war first-hand. While being one of the most easily identified attributes of warfare, under the namely disguises of chance, fortune, luck, or τύχη, chaos emerged both as a theory and a branch of mathematics late in the 1880s, initiating an extensive research principally on the behaviour of dynamical systems.

Mann (1992, p. 58) summarizes that research in chaos theory has shown that within these dynamical systems, nonperiodic order exists, which means that seemingly random collections of data can yield orderly yet nonrecurrent patterns. Another important point is that such chaotic systems exhibit sensitive dependence upon initial conditions, suggesting that a slight change in any one of the initial inputs leads to disproportionate divergent outcomes. (Mann, 1992, p. 58) Finally, the fact that order exists in these systems, suggests that patterns can be predicted in chaotic

systems. (Mann, 1992, p. 58) In terms of exploiting chaos as a weapon though, no literature has been found that even acknowledges this possibility.

Supporting expressions on the possibility of weaponizing chaos are not to be found in the academic field. This is because chaos has not been deciphered in such an extent. No further leap regarding the exploitation of chaos as a weapon can be made, unless chaos theory is mathematically proven that it can be utilized effectively under certain circumstances, for the successful conduct of warfare. Nonetheless, perhaps as a giant theoretical leap was needed in the field of quantum mechanics in order for the relativity theory to emerge, thus allowing us to comprehend in depth nuclear physics and then produce the first nuclear weapons, the same evolutionary process in the theoretical realm might be required in order to elucidate the usefulness and applicability of chaos theory in the conduct of warfare. According to scholars Paret and Howard (1965, pp. 6-8), Clausewitz's predecessors treated chaos in a negative manner whereas the development of the positive side of chance, was one of the special contributions of Clausewitz in the progress of military theory.

While Korybko (2015, p. 24) concurs with the position of Mann's (1992) article "Chaos Theory and Strategic Thought", he further points out that "the incorporation of chaotic principles into Hybrid Wars is a defining aspect of Fourth Generation Warfare." Furthermore, Korybko states that "Hybrid War is at its core, managed chaos." (2015, p. 24) Mann's (1992, p. 60) most significant contribution in the use of chaos in the conduct of warfare, is the remark that he makes on the true value of chaos theory, which in his own words: "Large interactive systems perpetually organize themselves to a critical state in which a minor event starts a chain reaction that can lead to a catastrophe. . . Although composite systems produce more minor events than catastrophes, chain reactions of all sizes are an integral part of the dynamics. . . Furthermore, composite systems never reach equilibrium but instead evolve from one metastable state to the next." (Per Bak and Kam Chen, 1991, p. 46) Although that the importance of the metastable state will be discussed in chapter six, as it regards the second hypothesis of this research project, the concept of the

metastable state is mentioned at this point of the research. This is because it is easier for the reader to know beforehand some elements of chaos theory, in order for him to comprehend better how chaos theory helps reinterpret and apply the IA theory.

Sergei's (2011) article substantiates the applicability of 'manageable chaos theory' else which was also proposed by Gene Sharp, who wrote '*From Dictatorship to Democracy',* and Steven Mann's (1992) '*Chaos Theory and Strategic Thought'.* All the above, depict that the weaponization of chaos has not only materialized from the theoretical realm into the practical, but it has also proven its efficiency, especially in the conduct of fourth generation warfare[1].

The most important lesson that can be drawn from the above lines suggests that war is a phenomenon which abides by the laws of chaos. As such, repetition of certain patterns can be discerned in the phenomenon of war, with the only exemption being the fact that these patterns are aperiodic, meaning that they come up at non-steady time intervals. As a result, the only problem that remains, is the prediction of when these patterns will emerge. The answer to this question came from John Boyd.

2.3 The Indirect Approach and the connection with OODA Loop theory

United States Air Force Colonel John Boyd, was an eccentric figure. Pushing aside his flying career, Boyd invested a huge amount of his time in reading voraciously on subjects of military history, engineering, quantum mechanics and philosophy.

[1] "Fourth generation operations are defined in this study as conflict which combines elements of guerrilla tactics, terrorism, traditional warfare, and the ability to exploit and skip generations of technology to conduct operations, particularly to target the will and morale of the enemy's support structure, in order to achieve political victory. In this definition, the support structure refers to both the population and the combatants. This definition does not focus on nation-states, thus including cases where transnational groups are the instigator or target of the conflict. Additionally, the specific methods applied in the conflict are not specified; therefore, fourth generation operations may use any military, diplomatic, economic, or informational instrument of power to influence their enemy's will and morale." (Artelli M. J. and Deckro R. F., 2008, p. 226)

By the end of his cerebral voyage, he had come up with the theory of the OODA Loop. Boyd himself considered the OODA Loop as the ultimate formula, by which if exploited in the correct way, victory would be rendered on the side of the OODA's user. Boyd's inception of the OODA Loop which accounts for the repetition of four independent and interconnected phases, Observe, Orient, Decide, Attack, rested upon other three concepts, Gödel's Incompleteness Theorem[2], Heisenberg's Uncertainty Principle[3] and the Second Law of Thermodynamics[4].

OODA loop describes four sequential phases. Observe-Orient-Decide-Attack. (Coram, 2002, p. 344) In the phase of Observation, the user gathers as much raw information as it is available, by using a variety of sensory systems. The quantity of gathered raw information is not of much importance though as it is the quality of information that plays a more significant role. In the Orient phase, the user processes the information and focuses on what he considers the most important and valuable information. For the Decide phase, the user decides on what actions should be undertaken, always taking into consideration the quality of information that he

[2] "The first incompleteness theorem states that in any consistent formal system *F* within which a certain amount of arithmetic can be carried out, there are statements of the language of *F* which can neither be proved nor disproved in *F*. According to the second incompleteness theorem, such a formal system cannot prove that the system itself is consistent (assuming it is indeed consistent)." (Stanford Encyclopedia of Philosophy, 2013)

[3] "The uncertainty principle states that one cannot assign exact simultaneous values to the position and momentum of a physical system. Rather, these quantities can only be determined with some characteristic "uncertainties" that cannot become arbitrarily small simultaneously." (Stanford Encyclopedia of Philosophy, 2016)

[4] "There exists a useful thermodynamic variable called entropy. A natural process that starts in one equilibrium state and ends in another will go in the direction that cause the entropy of the system plus the environment to increase for an irreversible process and to remain constant for a reversible process." (NASA. 2017. Second Law of Thermodynamics.)

possesses. The final phase, that of Attack is the more practical aspect in which decisions that were made in the previous phase are implemented as fast as possible. OODA loop's value is usually disregarded as oversimplified but its value is understood when some of its attributes are taken into consideration. The loop's four phases do not work only in conjunction with each other but they are individual components of a dynamic system. This means that each phase of the OODA loop consists of another never-ending loop. In essence, when the cycle of each phase is completed, the process starts again. Additionally, when the OODA loop is completed, the cycle will start again from the beginning. The speed in which the OODA loop is applied is the most significant element of the OODA loop. As Boyd himself also remarks for the OODA loop "In order to win, we should operate at a faster tempo or rhythm than our adversaries-or, better yet, get inside the adversary's Observation-Orientation-Decision-Action time cycle or loop...Such activity will make us appear ambiguous and unpredictable, thereby generate confusion and disorder among our adversaries since our 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." (Coram, 2002, p. 328)

The principal reason that the OODA loop theory has been inserted in this research project is because it allows its user to take unpredictability out of chaos and also weaponize chaos. It was mentioned above that chaos is organized in aperiodic patterns. With the utilization of OODA loop though, these patterns can be discerned. Let us assume that for the purposes of this research, two teams, blue and red, are tasked with simulating the decision-making processes of two adversarial parties in a war scenario. Both teams are equally emerged in chaos, as it is unknown to both of them what the other's team strategy is. Both teams have been taught the basics of the OODA loop theory and they decide to put their knowledge into action. Team blue though, goes through the OODA loop at a faster pace than team red. As a result, team blue becomes the initiator in the battle events, sowing confusion towards team red. What was before an opponent, chaos, has now evolved into an ally. Team red's perception is that they are obliged to follow and react to team's

blue actions. Team red have entrapped themselves with chaos and their own pre-conceptions. On the other hand, team blue is oriented forwardly and invests heavily on sustaining a high level of situational awareness of the strengths and weaknesses of both team blue and red. He who gains the initiative in the battlefield, is already a step ahead of his opponent. The next step is for him to insert himself in his opponent's mind and control it by fixing the stage accordingly.

2.4 The Indirect Approach and the connection with Reflexive Control Theory

The best way to predict the future is to invent it.

(Alan Kay-Xerox. 1982. InfoWorld.)

Sun Tzu was the first to acknowledge the fact that "The supreme art of war is to subdue the enemy without fighting." (ch. 3, p. 29) Almost two decades ago, Colonel S. Leonenko defined Reflexive Control theory as "transmitting motives and grounds from the controlling entity to the controlled system that stimulate the desired decision. The goal of RC theory is to prompt the enemy to make a decision unfavorable to himself. Naturally, one must have an idea about how he thinks." (Leonenko, 1995, p. 28) Thomas (2015, p. 456) refers and explains Reflexive Control theory as: "A truly unique Russian concept that has assisted Russian actions over the past decades. It was developed and used during the Soviet era. It is defined in several ways, depending on the author. RC theory has generally been understood as a means of conveying specially prepared information to a partner or an opponent to incline him to voluntarily make the predetermined decision desired by the initiator of the action." (Thomas, 2015, pp. 445-461) Makhnin's (2013, pp. 31-46) article, 'Reflexive Processes in Military Art: The Historico-Gnoseological Aspect' also provides a detailed description of the use of reflexive processes in military art.

Whereas RC theory is categorized as an aspect of Russian information-psychological operations (Thomas, 2015, p. 16-21), RC theory has recently emerged in the literature that concerns the Hybrid Warfare concepts that were practiced by the Russian Federation in the events of Ukraine, which started in 2014. (Perry, 2015) Despite the different literary labels that practitioners of war come to identify RC theory, the diachronic interest that the theory received from both the Russians and the Americans, depicts that both parties acknowledge the importance of the concept. (Thomas, 2004, pp. 237–256) (Diane, 1986) The insertion of this particular theory in this research project has been deemed critical, as RC theory is the cornerstone of the IA theory. It is worth mentioning that a close relationship exists between the RC theory and the OODA loop theory as Boyd notices on T.E. Lawrence's observation of how a commander must 'arrange the mind' of the enemy in order to secure victory. (Blount, 2009, p. 193)

One of the most important points of the RC theory, is the fact that it stresses directly the growing significance of the use of social science techniques in the science of warfare. In fact, the use of social science techniques confirms one of the elementary truisms of war, as Robinson (2004, p. 16) quotes: "the battlefield is a human one and creating psychological impact is the key to victory." Jean Piaget's theory of Cognitive Development and extensive research in the field of psychology about perceptions, has shown that one's own beliefs and judgemental capabilities, are literally unique. This is because each person leads a unique path in life, both in terms of genetics and experiences, that is non-identical with that of any other human being at any point of time and space. Heuer (1999, pp. 1-6) quite starkly stresses out this point in his book 'Psychology of Intelligence Analysis', that "people have no conscious experience of most of what happens in the human mind", leading them in believing that "what appears spontaneously in consciousness to be the result of thinking, not the process of thinking."

It is nothing less than a common secret that any effective formula that is to be utilized in the field of war, must contain the pivotal key of adaptation. Louisiana State University business professor named Leon C. Megginson (1963, Speech at the convention of the Southwestern Social Science Association) stated that "According to Darwin's Origin of Species, it is not the most intellectual of the species that survives; it is not the strongest that survives; but the species that survives is the one that is able best to adapt and adjust to the changing environment in which it finds itself." The first stage of understanding the necessity for change, in order to ensure survival, is performed in the intellectual level.

Smith came to the same conclusion as Megginson, regarding the success of conducting warfare. This is clearly depicted in his words: "On every occasion that I have been sent to achieve some military objective in order to serve a political purpose, I, and those with me, have had to change our method and reorganize in order to succeed. Until this was done we could not use our force effectively. On the basis of my lengthy experience, I have come to consider this as normal – necessary part of every operation. And after forty years of service, and particularly the last twelve, I believe I have gained an understanding of how to think about this inevitable and crucial phenomenon of conflict and warfare. The need to adapt is driven by the decisions of the opponent, the choice of objectives, the way or method force is applied, and the forces and resources available, particularly when operating with allies. Only when adaptation and context are complete can force be applied with utility." (Smith, 2005, p. 10)

2.5 The application of the three theories in the chosen case studies

It has been argued in the introductory chapter of this research that the three theories, Chaos, OODA Loop and Reflexive Control theory will assist this project in dissolving the IA theory through a scientific way. In the process of researching, it was very difficult in finding case studies that followed the eight axioms that Hart proposed as the pillars upon which the IA rests. As a result of this, it was decided that a different approach would be required in order to deconstruct the IA theory. Hence, it was decided that case studies that included the two principles of the IA

theory, dislocation and exploitation, would be chosen. To further accentuate the credibility of the scientific approach, it was decided also that the two maxims of the IA theory needed to be explained through the use of the previously mentioned theories. The IA theory has been practiced in both case studies. How then, these theories will be utilized and how will they be applied in the following case studies?

Firstly, the existence of these theories will be noted in both case studies. Secondly, it will be shown how both Lawrence and Wingate utilized the theories in such a unique way, even at times at an unconscious level, so that they managed to outwit their opponents. Emphasis will be given on the thinking of both Lawrence and Wingate, as it is through their thinking that we have the opportunity to comprehend how they came to the conclusion that the best way to conduct warfare was through the application of the IA theory. During the case studies and their analysis, the reader will notice that some of the actions or thoughts of the Lawrence and Wingate, fall out of the orthodox way of conducting war, especially during the time periods in which these two characters lived. Many considered Lawrence and Wingate's figures eccentric, heretical, sometimes even mentally perplexed. Nonetheless, criticized by the results of their actions, they had both managed to prove that unorthodoxy was a road paved only for the bold and the intellectual.

Previous to entering chapters three and four, an explanation of why these specific case studies were chosen needs to be offered. As the reader will observe, both chapters offer some similarities. Firstly, each case study has one leading figure that plays an instrumental role. It is as if the actions of each leading figure are guided instinctively by the IA theory. This is the reason why the beginning of each chapter is devoted in the description of the leading figures of the case studies. The sole purpose of these short descriptions is to offer to the reader an insight to the minds of both Lawrence of Arabia and Orde Wingate. Secondly, despite the chronologic proximity of both case studies, the Arab Revolt and Wingate's exploits are confined in the periods from the start of WWI to the end of WWII. The unparalleled productivity and creativity that countries exhibited in this period in military affairs was due to the fact that during WWI and WWII, victory equalled survival. Both

case studies exhibit clearly a uniqueness in terms of tactics used and strategic planning.

- CHAPTER 3 -

CASE STUDY – T.E LAWRENCE AND THE ARAB REVOLT

3.1 Lawrence's education and the outbreak of the Great War

Thomas Edward Lawrence was born in 1888, in Wales. His initial interest in the Middle East was in the castles of the Crusaders, especially those in Ottoman Syria, which in the summer of 1909 he set out alone on a three month, 1000 miles walking tour to explore. (Wilson, 1989, pp. 57–61) After his solo research pilgrimage to the Middle East on which he based his thesis, titled 'The influence of the Crusades on European Military Architecture—to the end of the 12th century', T.E Lawrence obtained in 1910 a First-Class degree in History from Oxford University. Calder (1996, Introduction of 'Seven Pillars of Wisdom', p. 12) notes that Lawrence had also developed a unique skillset, as a leader of Middle Eastern people while organizing under other academic seniors, scores of laborers on the dig.

By the time Lawrence had completed some brief work in Egypt and the Sinai, the Great War erupted. His previous field experience as an archaeologist, which at the time being, the specific profession was regularly used as a cover for intelligence operators, led to Lawrence being commissioned as an officer in Intelligence attached to the British GHQ in Cairo, center of planning for the Eastern war against the Turkish Empire, which had allied itself with Germany. Calder remarks on Lawrence that: "Whatever else may be controversial about Lawrence, there is no doubt that he had an acute mind and a great deal of practical ability, both organizational and, as it would prove, technical. He was clever at gathering 'intelligence', understood men of all nationalities quickly, and had an equally swift insight into the machines which made modern warfare very different from the combats of the Crusaders." (Calder, 1996, Introduction of 'Seven Pillars of Wisdom', p. 12) Lawrence's organizational and intellectual skills were shadowed by his gift of empathy. Lawrence's ability to understand the inner mechanisms of the human soul, allowed him to build lasting relationships with Arab parties and

between previously hostile Arab parties which were of extreme use in the Arab Revolt campaign.

3.2 Roots of the Arab Rebellion

The general impression that concerns the birth of the Arab Revolt is that in exchange of Arabs allying to the British struggle against the Central Powers, Arabs were to be granted a state after the end of the war. This impression is also sustained throughout Lawrence's book, 'Seven Pillars of Wisdom'. This was not the case though. In the beginning of the 20th century, Turkey was undergoing a phase of cultural zymosis, as a result of the growing public dissatisfaction between the Turkish population and the Turkish administration. This cultural zymosis came as a result of the treatment that the Ottoman Empire used on the conquered territories and their populations, during the Empire's early expansion phases. At the Ottoman's empire apogee, the Ottoman administration had found it easier to employ the technique of divide and conquer between the multi-ethic populations that comprised it. While in the long-term, this approach served the Ottoman administration very well, it also had its disadvantages, one of them being the fact that the Ottoman empire was not an empire of homogeneous population but was still by 1914, an empire comprised by ethnic entities which were united and ruled, under the Sultan.

Hussein, the Sherif of Mecca, had dreamt of a regular Arab Empire, to be ruled over by himself from Mecca. At the time of Turkey's zymosis, Hussein had taken the opportunity of a forced, but nevertheless honorable confinement in Constantinople in order to secure a first-class education for his four sons. Hussein had sought British support for his personal ambitions well before the outbreak of war, and his decision to collaborate with this Christian Power against Turkey's Sultan was exclusively motivated by his personal gain considerations. (Efraim Karsh and Inari Karsh, 1997, p. 267) After the failure of the Gallipoli campaign, Hussein was hesitant in asking for support from the British but his ambitions overcame his hesitation at a secret meeting he had with some British officers on a

deserted reef on the Red Sea coast near Mecca. Hussein was promised that England would give him what help he needed in guns and stores for his war.

As a result of this promise, Hussein gave orders to attack the Turkish garrison at Medina and this is how the Arab Revolt had begun. (Egan, 1948, pp. 396-397) Lawrence (1935, p. 38) himself noted also that "the subject races of the Empire, who formed nearly seven-tenths of its total population, grew daily in strength and knowledge; for their lack of tradition and responsibility, as well as their lighter and quicker minds, disposed them to accept new ideas." British support of the Arab Revolt cause was also not as warm as was once believed to be despite British nervousness to secure the Suez Canal, one of the main arteries of communication with the British colonies to the East. Another crucial factor were also the raw materials that the Middle East was providing to the war effort such as corn, rice and oil deposits. (Lawrence, 1935, p. 7). Papers of the Arab Bureau, a department which had been recently formed, under the direct control of the Foreign Office, to assist the revolt (Egan, 1948, pp. 398), reveal that Brigadier General G.F Clayton favored British support of Hussein and the Revolt but only in so far as to allow the Revolt to sink or swim on its own strength. (Tarver, 1978, p. 592)

3.3 In quest of an Arab leader

In search of a "power or race which could outweigh the Turks in numbers, in output, and in mental activity" (Lawrence, 1935, p. 39) Lawrence was set upon finding a man which would unite Arabs in their Revolt against the Ottoman Empire. Lawrence approval of Prince Faisal as the most qualified for leading the Arab Revolt is condensed in his description of prince Feisal for whom he states that: "His personal charm, his imprudence, the pathetic hint of frailty as the sole reserve of this proud character made him the idol of his followers. His training in Abdul Hamid's entourage had made him past-master in diplomacy. His military service with the Turks had given him a working knowledge of tactics. Meanwhile, here, as it seemed, was offered to our hand, which had only to be big enough to take it, a prophet who, if veiled, would give cogent form to the idea behind the activity of

the Arab Revolt. It was all and more than we had hoped for, much more than our halting course deserved." (Lawrence, 1935, pp. 82-83)

3.4 Attesting to the eight axioms of the Indirect Approach theory

Following the failed Gallipoli campaign at the straits of Dardanelles, the Allies became pressed in finding another way of defeating Turkey. As a result, the Allies followed unconsciously, every single one of Hart's IA theory axioms. Firstly, they kept their objective in mind which was to defeat Turkey and secondly, they managed to adjust their means in order to achieve their objective by seizing the opportunity of an Arab Revolt, offered by one of the Sultan's trusted associates, Hussein. By taking this option, the Allies attested devoutly to axioms four to eight. Allies had managed to choose and exploit the line of least expectation as the Sultan would find out later, that he was threatened more by the actions of his corrupted associates than from his stated enemies. At their second attempt, Allies were uneager in renewing an attack along the same line after it has once failed and for that reason they did not throw their weight into a stroke whilst their opponent was on guard. In the case where the Arab Revolt failed to achieve its mission, Allies were eager to distance themselves from the diplomatic repercussions that states such as England would most likely face, after providing their support to an Arab guerrilla force which fought against a sovereign state such as the Ottoman Empire. This was clearly apparent in Brigadier General G.F Clayton's favoring the British support of Hussein and the Revolt but only in so far as to allow the Revolt to sink or swim on its own strength. (Tarver, 1978, p. 592) As a result, in either case of the Revolt being successful or not, the Allies responses were flexible and adjustable to the circumstances.

3.5 Lawrence's Approach to War

Lawrence's lack of military education was balanced by his early interest and reading on military history, completed during his studies as an archaeologist. Lawrence confided to Lowell Thomas that his study of the mobile tactics of Caesar and Xenophon had been of more value to him in his desert campaign than Foch's

more rigid ‘Principles of War’. (Thomas L., 1924, p. 14) His lack of a military training though allowed him to perceive situations through a wider perspective. This concept was completely opposite than the army’s insistence to an injection of a strict rigidity in the thinking processes of its personnel in order to endure discipline and cohesion. Lawrence’s lack of military training, was in that respect an advantage, that allowed him to be far more creative in coming up with options on how to achieve the objectives, set by his superiors.

Lawrence’s approach in achieving a successful outcome for the Revolt was primarily unorthodox, considering all the other traditional ways that military leaders often utilized at the time being. Instead of focusing on gathering a large Arab army, training it and then seeking a decisive battle with the Turkish army, Lawrence chose to set his own terms by which he would force his opponent to fight him. He concluded that his “largest resources, the Bedouin on whom our war must be built, were unused to formal operations, but had assets of mobility, toughness, self-assurance, knowledge of the country, intelligent courage” (Lawrence, 1935, p. 215) and for this reason he needed to exploit the dispersal of his troops instead of massing them against the enemy. Lawrence conclusions were abiding by the first four axioms that Hart proposed later as the axioms of the IA theory. He had adjusted his means to his end while he parallelly chose and exploited the lines of least expectation. The Turks knew that they were facing a small Arab force, but the majority of them never had the chance, during the war to fire upon the Arab force. (Lawrence, 1935, p. 184)

Trying to discern the aim of war, Lawrence was unconvinced that “victory could be purchased only by blood.” (Lawrence, 1935, p. 178) If the destruction of the enemy’s armed forces by the one process, battle was the true aim of war, then how a Turkish Clausewitz would buy his victory as the Arabs had no organized forces? (Lawrence, 1935, p. 178) He concluded that Von de Goltz had seemed to go deeper, saying it was necessary not to annihilate the enemy, but to break his courage.” (Lawrence, 1935, p. 178) At this point, he also stressed Saxe’s point of “reaching victory without battle, but by pressing our advantages mathematical and

psychological." (Lawrence, 1935, p. 215) The idea of avoiding battle, lies at the heart of the IA theory. Lawrence was on a path of discovering and applying the two principles and the eight axioms of the IA theory.

3.6 Lawrence and Chaos theory

As it has been noted in the introductory chapter, this research has identified three theories that will be utilized in order to successfully deconstruct the IA application. Lawrence acknowledges the existence and the importance of chaos as a factor in his calculations for conducting warfare, quoting that "Victory in general habit leaned to the clear-sighted, though fortune and superior intelligence could make a sad muddle of nature's 'inexorable' law." (Lawrence, 1935, p. 180) What he calls nature's inexorable law, is clearly chance, a comprising element of chaos. Lawrence second observation on the nature of chaos though is startling. He mentions that "a line of variability, Man, persisted like leaven through its estimates, making them irregular." (Lawrence, 1935, p. 181) His observation on chaos, is almost identical with the one that mathematicians would years later identify as the most significant characteristic of a dynamical system, that patterns can be discerned through chaos in aperiodic cycles.

3.7 Lawrence and OODA Loop theory

What was needed then for Lawrence in order to deconstruct chaos, was to come up with a practical way that would allow him to discern these aperiodic patterns through the chaos that was produced in the process of conducting warfare. At the time when Lawrence was organizing or even sometimes personally even lead some of the attacks, the OODA Loop theory had not been invented. On the other hand, Lawrence states that "discrimination of what point of the enemy organism to disarrange would come to us with war practice. Our tactics should be tip and run: not pushes, but strokes. We should never try to improve an advantage. We should use the smallest force in the quickest time at the farthest place." (Lawrence, 1935, p. 328) At the core of the OODA Loop theory lies the use of time and the element of adaptability. The element of adaptability was a crucial variable in the British way

of conducting war and especially counterinsurgency operations, as some years earlier Callwell had stated in a lecture at the Aldershot Military Society in 1895, that in order for an army to secure victory, it was deemed necessary to "adapt our principles to the nature of the enemy". (Whittingham, 2012, p. 594)

It is precisely these elements that Lawrence also stresses. The OODA Loop theory basically states that there are four independent phases, Observe, Orient, Decide and Attack. The user of this theory goes through each phase in order to obtain situational awareness of an event. The user that goes through the OODA Loop at a faster rhythm than the other users, is clearly at an advantage because he obtains not only a clearer situational awareness but also because he obtains it before the other users. As a result, he can be the initiator of actions, whereas the other users are transformed into passive observers of evolving events. That is the meaning behind Lawrence's words of using the smallest force in the quickest time at the farthest place.

Lawrence distilment of a higher form of warfare comes in Book III, chapter XXXIII of his book 'Seven Pillars of Wisdom.' He deconstructs war in three independent components. These are the Algebraical element, the Biological element and the Psychological element. In his own words, "The first confusion was the false antithesis between strategy, the aim in war, the synoptic regard seeing each part relative to the whole, and tactics, the means towards a strategic end, the particular steps of its staircase. They seemed only points of view from which to ponder the elements of war, the Algebraical element of things, a Biological element of lives, and the Psychological element of ideas. The Algebraical element looked to me a pure science, subject to a mathematical law, inhuman. It was essentially formulable." (Lawrence, 1935, p. 181)

3.8 Lawrence and Reflexive Control theory

Lawrence's epiphany though was not of acknowledging chaos or the way of interpreting it for his own benefit. But it was through his comprehensive understanding of these two concepts that he realized that the true art of war was in placing your opponent in a controlled environment. Lawrence credited Xenophon's term of 'diathetics' as the inspiration for his inception of the concept of arranging the mind of your enemy. Following is the original account of the conclusion of Lawrence on the arrangement of the mind of the enemy. "Some of it concerned the crowd, an adjustment of its spirit to the point where it became useful to exploit in action, and the pre-direction of this changing spirit to a certain end. Some of it concerned the individual, and then it became a rare art of human kindness, transcending, by purposed emotion, the gradual logical sequence of the mind. It was more subtle than tactics, and better worth doing, because it dealt with uncontrollable, with subjects incapable of direct command. It considered the capacity for mood of our men, their complexities and mutability, and the cultivation of whatever in them promised to profit our intention. We had to arrange their minds in order of battle just as carefully and as formally as other officers would arrange their bodies. And not only our own men's minds, though naturally they came first. We must also arrange the minds of the enemy, so far as we could reach them; then those other minds of the nation supporting us behind the firing line, since more than half the battle passed there in the back; then the minds of the enemy nation waiting the verdict; and of the neutrals looking on; circle beyond circle." (Lawrence, 1935, pp. 184-185)

The most important aspect of Lawrence's inception is the fact that he has discovered a solution that in his own opinion, allowed him to dealt with the uncontrollability of events. Note that he did not mention that his inception eliminated unpredictability, but it offered him a way of organizing unpredictability so as to obtain his objectives. Lawrence also shows a clear understanding for the connection between human psychology and human logical reasoning. He places special emphasis on the manipulation of human logical reasoning through the

human psychological factor as the catalytic factor for gaining victory in the conduct of war. He defined the ability of arranging the hearts and minds of his own people but also those of his enemies as the ultimate skill that a general could obtain. On describing this phenomenon, he borrowed from Plato the term of δόξα. On this his commented that: "The 'felt' element in troops, not expressible in figures, had to be guessed at by the equivalent of Plato's δόξα and the greatest commander of men was he whose intuitions most nearly happened. Nine-tenths of tactics were certain enough to be teachable in schools; but the irrational tenth was like the kingfisher flashing across the pool, and in it lay the test of generals. It could be ensued only by instinct (sharpened by thought practicing the stroke) until at the crisis it came naturally, a reflex. There had been men whose δόξα so nearly approached perfection that by its road they reached the certainty of ἐπιστήμη. The Greeks might have called such genius for command νόησις had they bothered to rationalize revolt." (Lawrence, 1935, pp. 182-183)

3.9 Callwell's influence on Lawrence

Most likely though, Lawrence was influenced by Callwell's 'moral force of civilization' by the time he had come to the conclusion that the moral effect was very important in the conduct of warfare. Callwell coined the term 'butcher and bolt' in order to describe describe the punitive raids in which regular forces would burn villages and remove crops and cattle. This strategy was considered by Callwell as the best way to win the 'hearts and minds' of the enemy. (Whittingham, 2012, p. 592) The importance of winning the 'hearts and minds' of the people had been indeed much more-earlier identified than both Lawrence and Callwell but both of them had chosen different methods of attaining their objectives. Callwell had chosen to achieve his objectives by violence and suppression whereas Lawrence chose to weaponize chaos, fix his opponent's mind and then fight him at the terms that he had already set. Another difference between Lawrence and Callwell's thinking was that Callwell believed that irregular warfare should be kept as 'regular' as possible. This is inferred in his statement that: 'The whole spirit of the

art of conducting small wars', he wrote, 'is to strive for the attainment of decisive methods', which meant victory on the battlefield. (Callwell, 1896, p. 125.)

On the other hand though, Lawrence preferred to achieve his objective by following Hart's IA theory third and fourth axioms that stated that the line of least expectation should be chosen and exploited in order for securing success. Lawrence following calculations depict clearly this point. "One company of Turks firmly entrenched in open country could have defied the entire army of them; and a pitched defeat, with its casualties, would have ended the war by sheer horror. I concluded that the tribesmen were good for defense only but if we strengthened them by light automatic guns of the Lewis type, to be handled by themselves, they might be capable of holding their hills and serving as an efficient screen behind which we could build up, an Arab regular mobile column, capable of meeting a Turkish force (distracted by guerrilla warfare) on terms, and of defeating it piecemeal. They would eventually finish the war by striking while the tribesmen skirmished about, and hindered and distracted the Turks by their own pin-prick raids." (Lawrence, 1935, p. 89) In defeating the Turks, Lawrence was convinced that the most effective method would be that of a strategic ambush.

- CHAPTER 4 -

CASE STUDY – WINGATE'S EXPEDITIONS IN SUDAN, PALESTINE, ETHIOPIA AND BURMA

'This man of genius who might well have become a man of destiny.'

(Letter from Winston Churchill to Mrs Wingate after Orde Wingate's death. 1944)

4.1 Birth of Wingate and signs of early eccentricity

"What could be better than to be a dashing young British officer fighting deep behind enemy lines, disrupting lines of communications in uncompromisingly harsh territory? What T.E Lawrence achieved in the desert, Wingate would achieve in the jungle." (Roberts, 2010, p. 10) Orde Wingate was born on 26th of February, 1903, in Naini Tal, the summer capital of the United Provinces in the North of India. Coming from a family with deep military background, in an era in which some regiments of the British army took immense pride in its officers' family connections, Orde was from a very early age inclined to follow in his ancestors' steps. (Royle, 1995, p. 5) Despite his family's military background, the other reasons that pushed Orde to pursue a military career were that he was academically uninspired, which resulted in his marks being placed near the bottom of every class he attended, while at the same time, Wingate's parents made it clear to him, that they would be unable to support him financially after he finished school. (Royle, 1995, p. 26)

Wingate never failed in exhibiting his eccentric behavior, thus sewing for himself a veil of mixed enthusiasm and disgust among his senior and peer military colleagues. A noteworthy incident is the one which Tulloch, (1972, p. 32) mentions in his book 'Wingate in Peace and War', in which Wingate was to be unofficially punished for exemplifying the behavior of disgraceful conduct. Instead of compliance to his punishment, which required him to run naked to a cold-water tank while being beaten by knotted handkerchiefs by his senior classmates, Wingate turned the humiliation against his punishers by walking defiantly through them

while staring at them with a dangerous look. Young Wingate exhibited from an early age that he was able to delve deep into the nature of power and use it to his own advantage by projecting it to his fellow men through his own personality. “Wingate was certainly a maverick with a reputation for eccentricity, yet he used the estimation as a cloak, because, being a zealot in a conformist society like the army, nothing would be expected of him, provided that he did not break the basic rules. More than that, throughout his life, he was a man of extremes who brooked no middle way. With Wingate, it had to be all or nothing.” (Royle, 1995, p. 4)

4.2 First posting: Sudan

Sir Reginald Wingate, a cousin of Orde’s father, was a retired army general who had been the governor of Sudan from 1899 to 1916. ‘Cousin Rex’ as Orde would regularly mention him, was an influential character over Wingate’s future career, especially in his Middle East postings. By 1928, Wingate’s application of transferring to the Sudan Defense Force was accepted, and he was posted near the borders of Ethiopia, where the Sudan Defense Force was patrolling in order to eliminate slave trading and ivory poaching. Orde was instrumental in redesigning patrolling strategies from that of traditional patrolling treks to ambushes. In a peculiar way, destiny was placing Wingate in a position that was not only suitable for him to practice his talent for unorthodox thinking and warfare, but at the same time, being initiated in the art of the bush-craft. These lessons served Orde exceptionally well in the conflicts that he would participate in the following years of his life. Royle (1995, p. 68) stresses this point when he states that: “However, the experience of trekking would leave a lasting effect not just on his personal development; it would also influence the way he viewed soldiering. Alone with his men in the wastes of the Dinder country he learned a number of useful lessons. The first was that, properly trained and motivated, small groups of men could learn to survive in a hostile environment. Second, they could operate in isolation far from home base provided that they were properly led and had faith in their commanders. Third, they had to be kept up to the mark and galvanized by constant training, the more realistic the better.”

4.3 Inventing new tactics for long-penetration operations

One of the most important tactics that Wingate can be credited as the inventor, during his time in Sudan, was the use of aircraft as the means of supplying his small units with food and ammunition during long-penetration operations. This was made possible because of the invention of the hand-held radio communication devices which allowed ground troops to communicate their positions to aircraft, which would in their turn parachute the supplies near the ground troops. Wingate would march his infantry company 500 miles into remote areas of eastern Sudan, experimenting with ground-to-air control by working with RAF Squadron 47 (B). (Diamond, 2012, p. 10) As a result, he was laying the foundations of an emerging tactic that he and future commands would utilize years later. (Diamond, 2012, p. 10)

4.4 Early utilization of the OODA Loop theory

On the other hand, slave traders and poachers adapted by eluding the patrols that were following pre-determined paths in certain time frames of the day. It is at this stage that Wingate starts exhibiting his intellectual skillset. At this specific example, Wingate depicts the utilization of the OODA Loop theory. Since he knew that the poachers could elude his patrol in the Dinder's brush if alerted, he devised tactics that depended on deception, surprise and selection of the best areas for ambushes. (Diamond, 2012, p. 10) Concluding that his opponents would try to adapt to his new tactic of ambushing, it is certain that he had already completed the OODA Loop faster than his opponents. This is suggested by his foreknowledge of how his opponents would react to his new tactic before he had already put his new tactics into action.

When it came to achieving success on the battlefield, Wingate chose the way of offsetting his opponent by adapting his tactics and pre-setting his opponent's mind, instead of choosing the traditional path of demanding new or different weaponry systems in order to defeat his enemy. The same mode of thinking is pointed out also by Qiao Liang and Wang Xiangsui (2007, p. 17) in their book 'Unrestricted

Warfare', who emphasize that: "However, a new concept of weapons is different. With technological developments being in the process of striving to increase the types of weapons, a breakthrough in our thinking can open up the domain of the weapons kingdom at one stroke. With regard to the flood of new-concept weapons, technology is no longer the main factor, and the true underlying factor is a new concept regarding weapons."

4.5 Posted in Palestine

Orde returned on England in 1933 and stayed until 1936 in which he was posted in Palestine as an intelligence officer. By the time of his arrival in Palestine, Palestinian Arab guerrillas had begun a campaign of harassing attacks on Jewish communities and the British mandate officials. One of the favorite targets of the guerrillas were the pipelines of the Iraqi Petroleum Company. Once again, the British were simply keeping a steady flow of patrols across the length of the oil pipelines and the nearby villages which were usually used as the bases from which Arab guerrillas were staging their attacks from. Personal experience and the insight that Orde gained from his time in Sudan, led him straight to the office of Wavell, then commander of the British forces in Palestine, to whom he proposed the creation of small, mobile, light-armed units comprised of both British and Jewish personnel. Thus, the Special Night Squads were brought into existence. Orde, personally lead the Special Night Squads into enemy territory, setting ambushes and inflicting heavy losses to the Arab guerrillas thus leading to a reduction of damages and costs that the Iraqi Petroleum Company had to incur, previous to Orde's counterinsurgency campaign. In achieving his aims, Orde listed the tactics to be used by his guerrilla squads: "never stick to a predictable route, never retrace a route, wear muted uniforms and cover all polished surfaces, develop hand signals for routine orders, create recognition signs for friendly aircraft, maintain fire discipline to prevent shooting at a fellow unit and, lastly, always try to imagine the enemy's intentions." (Royle, 1995, p. 191)

4.6 Wingate and the application of Reflexive Control theory

For the purposes of this study, we concentrate on the last part of his advice, on attempting to imagine the enemy's intentions. Wingate's counterinsurgency tactics favored primarily deception and surprise, as the core elements that had the potential to turn the tables against an opponent, if they were exploited skillfully. But Wingate's reference to an attempt in dissolving the enemy's intentions, depicts a much deeper understanding of how to achieve an objective in the battlefield. Sun Tzu, had commented on this specific subject stating that: "If you know the enemy and know yourself, you need not fear the result of a hundred battles." Wingate's thinking depicts that he had understood that if he knew his enemy's intentions, it was possible for him not to simply react to those intentions effectively, but that he could take those necessary actions so that he could strategically ambush his opponent in the long term.

Probably the best example of Wingate's preliminary inception of what we have come to know today as the Reflexive Control theory is found in his following statement: "One of the commonest means of obtaining surprise in war is by the use of unexpected boldness, as for example the passage of a small body of troops through the middle of an enemy position. To sum up, it may be said that surprise is the greatest weapon of the guerrilla; that it is far easier for him to obtain surprise against the enemy than vice versa; that to obtain value for the surprise achieved the commander must think out carefully beforehand how he will exploit the enemy's confusion." (Royle, 1995, p. 173) As Wingate notes, the element of surprise is useless unless it is compounded by proactive thinking of how surprise will be utilized after it is obtained. For Wingate, setting up the surrounding environment for your opponent was crucial, in order to secure that by the skillful exploitation of the enemy's confusion, it was possible to obtain the initiative in the battlefield.

4.7 Wingate's legacy to Israel

Unsurprisingly, as in the case of Liddel Hart, Wingate's instructions on conducting war, were and still are, highly regarded by people of the Israeli military and political establishment. Sadeh, a veteran leader of the Haganah[5] emphasized that what he had learned from Wingate, was that he could learn from textbooks how to lay an ambush or conduct a front-attack, but that was not enough for making you successful in war. What a soldier needed was to understand that each situation should be treated as it was a completely new situation. If every situation was treated like new, a soldier or a decision-maker would then try to solve it with a new approach. (Royle, 1995, p. 173) Wingate insisted that a successful solution to every emerging situation, could be obtained through the element of adaptability. The element of adaptability is a pillar upon which Hart's IA theory rests.

4.8 Wingate's second posting in Sudan

On the outbreak of World War II, Wingate, which was positioned in England, was invited by commander-in-chief of Middle East Wavell, to Sudan. From Sudan, he was to organize operations against the Italians which occupied neighboring Ethiopia. In Sudan, Wingate organized a special task force comprised by British and African soldiers, which he named Gideon Force. Gideon Force which was comprised by fifty officers, forty British NCOs, 1000 trained Sudanese troops and 1000 partially-trained Ethiopian regulars, highlighted once again the effectiveness of unorthodox tactics when combined with psychological warfare, especially when it managed towards the end of the campaign to capture 20,000 Italians and 14,500 Ethiopian troops. (Royle, 1995, p. 182) Royle (1995, p. 187) mentions that following Wingate's Ethiopian campaign, Wingate quoted that:

[5] "Haganah**,** (Hebrew: "Defense"), Zionist military organization representing the majority of the Jews in Palestine from 1920 to 1948. Organized to combat the revolts of Palestinian Arabs against the Jewish settlement of Palestine. Although it was outlawed by the British Mandatory authorities and was poorly armed, it managed effectively to defend Jewish settlements." (Britannica Encyclopedia, 2017)

"Given a population favorable to penetration, a thousand resolute and well-armed men can paralyze, for an indefinite period, the operations of a hundred thousand. While the means were different, this was certainly an argument which Lawrence would have understood." Wingate stresses once again the importance of conducting psychological warfare against your opponent when he states that: "It is a problem of how to realize to the full the power we possess of producing great results with small means through bluff and propaganda." (Royle, 1995, p. 197) As his predecessor Lawrence, Wingate came to the conclusion that the most effective method of defeating an adversary was through the use of psychological warfare, against the adversary's logical reasoning process.

With the surrender of the Italian occupation forces in Ethiopia, Wingate had proven himself a master in the art of deception, guerrilla and counterinsurgency tactics and the use of the indirect approach theory at the tactical level in order to secure victory in the strategic level. Wingate's military exploits in Sudan, Palestine and Ethiopia did not fail to impress many of his superiors, not only about the tactics that Wingate had developed but also as what Diamond (2012, p. 56) remarks: "Wingate's campaigns demonstrated traits of cunning and deception, coupled with a tendency towards the unorthodox."

4.9 Wingate and the Chindits

Nevertheless, as Wingate had already proven manifold times earlier in his career, he was not only an exemplary leader in the battlefield but also a visionary of means, tactics and strategies which proved effective both in defeating his opponents but also in economizing valuable resources. Thus, by the time that Wingate was planning the second offensive of the Allied forces in Burma, he had "the absolute support of the Prime minister with the promise of further personal backing should problems be placed in his way." (Royle, 1995, p. 270)

Despite his mounting successive campaigns throughout his military career, which employed mostly unorthodox, unconventional tactics and strategies, the majority of Wingate's superiors remained highly skeptical about whether the efficacy of Wingate's campaigns was the result of good luck or a result of a higher form of

reasoning and intelligence. In March 1942, Orde was posted in the Far East and was ordered to organize guerrilla units that would fight Japanese in the jungle and behind their lines. The birth of the Chindits, the force that Wingate is most commonly associated with, was born in the Burmese jungle after a mythical Burmese lion, the chinthe.

In the Far East front, Wingate was given the opportunity to test twice the validity of his long-penetration theories. As Wingate remarked in his memorandum (Forces of Long Range Penetration: Future Development and Employment in Burma) in 1943: "Long Range Penetration affords greater opportunity of mystifying and misleading the enemy than any other form of warfare. It provides the ideal opportunity for the use of airborne and parachutist troops without risking their loss. This calls for the use of the best troops available. RAF sections operating with columns are in a position to direct our aircraft with great accuracy on targets invisible and undetectable from the air. Such is the description of the vast majority of enemy targets in South Eastern Asia. To sum up, LRGs should be used as an essential part of the plan of conquest to create a situation leading to the advance of our main forces." (Royle, 1995, p. 267) Misleading and casting a veil of uncertainty inside the adversary's mind was only one of the elements that constructed Wingate's theory of the Long-Range Penetration. His previous experiences, had resulted in Wingate approaching war in a similar way that the Romans and the Byzantines were doing centuries ago. That was by bringing an opponent in a controlled battlefield, in which more opportunities presented for the initiator of events than for a passive opponent.

In the Asian front, the Allies needed to retake Northern Burma in order to link the Ledo Road to the Burma Road and ensure an overland supply route from India to China through Northern Burma and Yunnan. The linkage between Allied forces in India and the Chinese forces in China would then permit the mounting of a major land air operation in Burma moving southward down the great river valleys of the Chindwin, the Irrawaddy and the Sittang, and hopefully forcing Japan out of Burma. The task of preparing the ground for the retaking of Northern Burma was

given to the Long-Range Penetration Groups, the Chindits and the Marauders. Because of the acknowledged difficulties of their task and the nature of the terrain, it was agreed that the campaigns of the Chindits and the Marauders across the mountains and jungles of Burma would be limited to ninety-days of front-line action. (Trager, 1961, pp. 62-63)

Wingate professed that "modern war, was war of penetration in almost all of its phases." Followingly, he acknowledged that there are two types of this war, tactical and strategical. Tactical penetration is where the armed forces that carry it out, are directly supported by the main armies' operations. On the other hand, strategical penetration is where the armed forces that carry it out, are living and operating 100 miles behind the enemy's lines. According to Wingate though, strategical penetration pays by far the larger dividend on the forces that employ it. (Royle, 1995, p. 235)

In his turn, Asprey (1994, p. 425), commented that: "Wingate's point was that the enemy was most vulnerable far beyond his lines. His proposal was to cut the enemy's supply line, destroy his dumps, tie up troops unprofitable far behind the line in the endeavor to protect these vulnerable areas, and generally to help the army proper on to its objectives." (Fergusson, date, p. 21) Conclusively, Wingate's Long-Range Penetration theory pointed that victory could be achieved by an indirect approach. In this case, the indirect approach translated into taking a series of preparatory steps that would create those required conditions that would secure victory in the long-term. Wingate's Long-Range Penetration Groups utilized this approach tactically in the battlefield whereas at the same time, Long Range Penetration Groups were also being utilized strategically in order to create the necessary conditions that would secure a victory for the army that would follow the Chindits and the Marauders incursions deep behind enemy lines.

4.10 Synopsis of Wingate's employment of Chaos theory, OODA Loop theory and Reflexive Control theory

While Long Range Penetration Groups theory found many supporters, critics of the theory found it difficult to believe that the theory was coherent enough to be applied successfully in the battlefield. The answer though came from the interrogation of Japanese generals, after the war. They said that the difficulty of defending against Wingate's raid led them to mount an offensive against India in 1944 in order to prevent future incursions. That attack failed and left them too weak to prevent the British recapture of Burma the following year. (Boot, 2013, p. 301) Such evidence, prove that Wingate's calculations were correct. Wingate had managed through the use of the Chindits and the Marauders, to lure the Japanese into a strategic trap, a concept which was similar to the one that he had utilized so many times before in Sudan, Palestine and Ethiopia. Victory was secured when the Japanese had decided to mount their offensive against India in 1944, but this victory materialized only after the Japanese had incurred high casualties in Burma and had failed to recapture it.

A closer observation of Wingate's endeavors in Sudan, Palestine and Burma, reveals a growing strategic and tactical maturity of Wingate's thinking. Wingate was always fighting opponents that were the majority of the times superior in numbers and technologically more advanced. In order to counter the advantages of his opponents, Wingate turned to devising new tactics and strategies. Wingate's plans insisted primarily on mobility and speed of thought so that his little force could be concentrated rapidly at decisive places and times. (Royle, 1995, p. 200) Wingate's insistence on mobility and speed of thought, reveal that Wingate had more than a rudimentary comprehension of the decision-making processes of his own but most significantly of his opponents. Since he had taken for granted that the battlefield and war was a phenomenon which abided primarily by chaos, Wingate was in search for alternative ways that would allow him to circumvent chaos. Although that he probably did not know it at the time being, Wingate was unconsciously but successively putting into practice the OODA Loop theory.

From Sudan to Burma, Wingate was always literally one step ahead of his opponents. How he managed to attain the edge over his opponents, was the product of the close observation of his opponents' behavioral attitudes, tactics and strategies. Wingate was not simply observing his opponents' tactics and strategies. If he had done only this, he would have failed to predict so accurately their responses when he put into actions his counterinsurgency tactics and strategies. His approach in observing his opponents was holistic, meaning that he observed specific patterns in the behavior of his opponents, which he then exploited. He possessed the charisma of understanding the logical reasoning processes of his opponents and that is why he was able to outperform them so successfully. Once Wingate had managed to deconstruct the logical reasoning processes of his opponents, he then proceeded in thinking on how they would react accordingly to different actions that he could take. Instinctively, Wingate followed methodically all of Hart's IA theory axioms. In Sudan, his purpose was to defeat the poachers and he adjusted the tactics of his patrols by choosing and exploiting the line of least expectation, setting ambushes instead of patrolling. As a result, Wingate's plan to countering poachers was flexible, so that his actions offered him alternative ways to attain his objective. On the other hand, poachers were deprived of the element of adaptability because their indecisiveness led them into a passive phase, in which they were simply responding to Wingate's actions. About the same pattern of thinking and action with minor modifications, can be discerned in Wingate's endeavors in Palestine and Burma. In not a single operation did Wingate try to attain his objective by using brute force or confronting his opponents directly. He favored to observe his opponent, orient and decide how he could attain his objective even by utilizing his own weaknesses and then act rapidly. He firstly dislocated his enemy and then he exploited the dislocation of his enemy so that he could attain success. As Lawrence years earlier, Wingate was also practicing Hart's IA theory effectively.

- CHAPTER 5 -

ANALYSIS OF THE INDIRECT APPROACH THEORY AS THE SYNERGISTIC RESULT OF CHAOS THEORY, OODA LOOP THEORY AND REFLEXIVE CONTROL THEORY

An operation of war cannot be thought out like building
a bridge; certainty is not demanded, but genius,
improvisation and energy of mind must have their parts.
(Winston Churchill. 1942. Quoted by Michael Howard in Grand Strategy-History of the Second World War, Vol. 4, p. 295.)

5.1 Hart's inception of the Indirect Approach theory

Hart's conception of the IA theory appeared in an era of conformity regarding military affairs and especially the conduct of warfare. The inception though of the IA theory was a result of a process which recent research has named lateral thinking. DeBono (1992, p. 87), author of the book 'Serious Creativity' notes that lateral thinking is: "Seeking to solve problems by unorthodox or apparently illogical methods." Both Lawrence's and Wingate's actions, depict that they followed unorthodox methods in order to solve the problems that arose during their endeavors. Despite the fact that the army favored conventionality and conformity to rules, especially during the era of the leading figures of the case studies, nevertheless, the element of creativity played an instrumental role in the construction and the application of the IA theory in the campaigns of both Lawrence and Wingate.

Following a similar path to the ones that had practiced the IA theory throughout history, Hart came upon two conclusions. Firstly, that no general is justified in launching his troops to a direct attack upon an enemy firmly in position and secondly, that instead of seeking to upset the enemy's equilibrium by one's attack, it must be upset before a real attack is, or can be successfully, launched. (Hart,

1965, Vol I, pp. 162-165) Both of Hart's conclusions were ahead of their era, as the traditional way of conducting warfare was heavily influenced by Clausewitz's principles such as that of direct confrontation at the enemy's strongest point of resistance.

In this chapter, an attempt will be undertaken to compare and contrast between the two case studies that have been included in this research project, in order to demonstrate that the IA theory can be formed, from the synergy of Chaos theory, the OODA Loop theory and the Reflexive Control theory. Additionally, key lessons from the case studies will be related to other historical or contemporary examples, so as to allow the reader an in-depth comprehension of the analysis undertaken.

5.2 The principle of economy of force

J.F.C. Fuller once remarked that all the principles of war could be subsumed under the principle of economy of force. (Murray and Mansoor, 2012, p. 141) Thornton (2007, p. 162) emphasized the importance of how force is employed, especially in today's battlefields. He pointed out that today's trend revolves around the concept of having a military which prefers solving warfighting problems through the employment of technology instead through intellect. Greene, supports Thornton's argument by noting that: "Armies that seem to have the edge in money, resources, and firepower tend to be predictable. Relying on their equipment instead of on knowledge and strategy, they grow mentally lazy. When problems arise, their solution is to amass more of what they already have. But it is not what you have that brings you victory, it is how you use it." In 1632, an expert Japanese swordsman and rōnin, named Miyamoto Musashi, wrote in his seminal book 'The Book of Five Rings' that: "Generally speaking, fixation and binding are to be avoided, in both the sword and the hand. Fixation is the way to death, fluidity is the way to life. This is something that should be well understood." (p. 28) What Musashi failed to address, is that fixation of the mind is even more destructive. Greene also points out this issue poignantly. Technologically superior countries become mentally stagnant allowing their opponents to become naturally more inventive. As a result, these technologically outdated opponents, learn more,

become more adaptable, and outsmart their powerful adversaries. Time becomes the ally for the weakest. (Greene, 2006, p.50)

The concept of economy of force had also been examined by Hart, for which he concluded that: "Economy of force and deterrent effect are best combined in the defensive-offensive method, based on high mobility that carries the power of quick riposte." (1941, p. 172) Almost half a century later, Rosen (1991, p. 113) would also argue in his book 'Winning the Next War-Innovation and the Modern Military' that: "The ideal concept of operations would be a defensive-offensive one that forced the enemy to wear himself out by attacking prepared defenses." During the examination of the two case studies in chapters three and four, the concept of mixing defense with offense was more than discernible. This concept lies at the heart of the IA theory. Moreover, the efficacy of the concept of merging defense with offense which has also been detected by Sun Tzu in his book 'Art of War', is identified throughout the course of military history. A historical example that exhibits the use and the effectiveness of this ideal concept of defense-offense in practice, is that which Boot (2013, p. 22), offers in his book 'Invisible Armies - An epic History of Guerrilla Warfare from Ancient Times to the Present'. "In 139 BC the Romans arranged for the murder of one of the most troublesome rebel leaders in Hispania, which they valued for its silver and gold mines. Virianthus, a shepherd who became the leader of a guerrilla army, had inflicted one setback after another on the legions during the preceding eight years. Operating from mountain strongholds, he perfected a tactic beloved of primitive warriors everywhere: he would pretend to flee from Roman forces in order to draw them into an ambush. This stratagem paid of in 146 BC when his Lusitanian tribesmen, armed with spears and curved swords, managed to kill four thousand Romans out of an army of ten thousand."

5.3 Economy of force applied by Roman and Byzantine generals

Explicitly, a closer examination of the tactics and strategies that the most successful Roman generals favored, reveals that the IA theory was regarded as the epitome of military skill and proficiency, despite the fact that none of theory's practitioners

came in designating it a specific term. Asprey (1994, pp. 22-23), references the case of the Roman general Quintus Fabius Maximus which was tasked with the interception of Carthaginian general Hannibal. "For months, Fabius shadowed Hannibal's marches. 'harassing his foragers, cutting off stranglers, nipping off a stray patrol, but never permitting himself to be drawn into full-scale battle.' Impatient Romans derisively called him 'the Laggard'; history has treated him more kindly by acknowledging him as the inventor of Fabian tactics. Such tactical adaptation was rare in the West, and almost always was forced by the enemy rather than produced voluntarily by a commander trained to think in terms of either the unexpected or the indirect approach based on cunning."

Faithfully abiding to their Roman roots in terms of military thinking, the Eastern Roman Empire's generals utilized a variety of stratagems and tactics that depict a strong preference towards the employment of the IA theory. 'On Shadowing Warfare', a handbook of defensive warfare, published in 965 AD, after emperor's Nikephoros Phokas request, that would help guide Byzantine generals counter the incursive raids made by Moslem general, Sayf al-Dawla, provides evidence of sophisticated military thinking produced by almost continuous offensive and defensive wars. Like Sun Tzu's book, Art Of War, other literary works of Byzantine emperors such as Maurice and Leo, form an interesting contrast to Western thinking of the time. Asprey, (1994, p. 34) also underlines the vast difference in Eastern and Western military philosophy at that time: "…Courage was considered at Constantinople as one of the requisites necessary for obtaining success, not as the sole and paramount virtue of the warrior. The generals of the East considered a campaign brought to a successful issue without a great battle as the cheapest and most satisfactory consummation in war. They considered it absurd to expend stores, money, and the valuable lives of veteran soldiers in achieving by force an end that could equally well be obtained by skill…They had a strong predilection for stratagems, ambushes, and simulated retreats. For the officer who fought without having first secured all the advantages for his own side they had the greatest contempt."

5.4 Merging defense with offence

In both case studies examined in this research, Lawrence and Wingate exhibited a strong preference in combining defense and offense, in order to attain their objectives. Lawrence run the Arab Revolt campaign in the same line that Fabius shadowed Hannibal's march to Rome, harassing the Turkish army and posts, but never allowing himself to be drawn in a direct confrontation with the Turks. Wingate on the other hand preferred to ambush his opponents at both the tactical and the strategic level. At the tactical level, Wingate's patrols ambushed the poachers and the Arab insurgents in Sudan and Palestine, whereas in Ethiopia and in Burma, his forces ambushed at the strategical level, Italian and Japanese forces respectively. Once again, in all of Wingate's warfare endeavors, there is are no signs of Wingate allowing himself to come into direct confrontation with his opponents. On the contrary, both Lawrence and Wingate utilized offense and defense in combination, in order to lure their opponents in an environment that maximized opportunities for victory for themselves, whereas it minimized opportunities of success for their opponents. The concept of combining offense with defense lies at the heart of the IA theory because it is the practical way for attaining dislocation and exploitation, the two principles that Hart identified as crucial for the success of the IA theory.

5.5 The utilization of Chaos theory, OODA Loop theory throughout the case studies

Following the examination of evidence taken from the two case studies, it can be concluded that both Lawrence and Wingate opted firstly to dislocate their opponents and secondly to exploit this dislocation. The phase of dislocation was achieved by Lawrence, by utilizing chaos theory and the OODA Loop theory, whereas in the case of Wingate's endeavors, chaos theory does not seem to be utilized at the same extent as in the case of the Arab Revolt. This observation is a result primarily drawn from Lawrence writings, in which multitude of times he refers to the element of unpredictability and chance. On the other hand, whereas Wingate seems to ignore chaos as a significant factor in the conduct of warfare,

literary evidence show that he was inclined in using imagination and creativity in order to be able to deconstruct the unpredictable. As a result, it can be concluded that although Wingate did not acknowledge directly the existence of chaos in war, he seemed to value both its existence and its significance. The OODA Loop theory though is utilized in Wingate's exploits. The most interesting part of the IA theory was when both Lawrence and Wingate had already managed to dislocate their adversaries. Once dislocation was achieved, the application of the IA theory transforms from an unconscious act into a deliberate and clearly discernible strategy as it enters the phase of exploitation. It is in the phase of exploitation that extensive use of the Reflexive Control theory can be observed, in both case studies.

The perspective that Greene offers on the IA theory, runs parallel to the approach of this research. Greene (2006, p. 78) states that unless you take the indirect route to your goal, you face the danger of losing the initiative, thus finding yourself constantly reacting to what the other side does. The solution Greene suggests, is to plan ahead but also to plan subtly, so that you prevent your opponent from seeing the purpose of your actions in the long-term. The concept proposed by Greene is closely linked with the OODA Loop theory that has been suggested in this research and it appears in both case studies recurrently. Both Lawrence's and Wingate's actions advocate that taking the initiative is a decisive factor for the success of an operation. Assuming the initiative in these two cases, is different from the traditional meaning that accustoms the term. Normally, assuming the initiative means moving from inactivity into action, either unintended or unplanned. In our case studies, Lawrence and Wingate did not take the initiative by simply moving from inactivity into action. The difference is that both of the leading figures of these case studies, took the initiative deliberately and after they had meticulously planned ahead. What made their plans durable and coherent was the use of the OODA Loop theory by both Lawrence and Wingate.

The OODA loop theory describes four sequential phases. Observe-Orient-Decide-Attack. (Coram, 2002, p. 344) In the phase of Observation, the user gathers as much raw information as it is available, by using a variety of sensory systems. The

quantity of gathered raw information is not of much importance though. In the Orient phase, the user processes the information and focuses on what he considers the most important and valuable information. For the Decide phase, the user decides on what actions should be undertaken, always taking into consideration the quality of information that he possesses. The final phase, that of Attack is the more practical aspect in which decisions that were made in the previous phase are implemented as fast as possible.

OODA loop's value is usually disregarded as oversimplified but its value is understood when some of its attributes are taken into consideration. The loop's four phases do not work only in conjunction with each other but they are individual components of a dynamic system. This means that each phase of the OODA loop consists of another never-ending loop. In essence, when, the cycle of each phase is completed, the process starts again. Additionally, when the OODA loop is completed, the cycle will start again from the beginning. The speed in which the OODA loop is applied is the most significant element of the OODA loop. As Boyd himself also remarks for the OODA loop "In order to win, we should operate at a faster tempo or rhythm than our adversaries--or, better yet, get inside the adversary's Observation-Orientation-Decision-Action time cycle or loop...Such activity will make us appear ambiguous and unpredictable, thereby generate confusion and disorder among our adversaries since our 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." (Coram, 2002, p. 328)

Musashi had come to the same conclusion in 1632 when he wrote that "In large scale military science, this means that you assess adversaries minds on the battlefield and use the power of your knowledge of the art of war to manipulate their attention, making them think confusing thoughts about what you are going to do. It means finding a rhythm that will fluster adversaries, accurately discerning where you can win." (Musashi, 1632, p. 65) Musashi, who wrote four centuries earlier than Boyd, also noted that: "When an opponent is startled and the feeling of opposition is distracted, the opponent will experience a gap in reaction time."

(Musashi, 1632, p. 105) As a result of this gap in reaction time, Greene notes that the opponent is at a severe disadvantage. (Greene, 2006, p.107)

By utilizing the OODA Loop theory faster than their opponents, both Lawrence and Wingate managed to bring their opponents at disadvantageous positions. The gaps in reaction time that the opponents of Wingate and Lawrence experienced also allowed Lawrence and Wingate to delve deep into their opponent's minds. Once they had reached this stage, Lawrence and Wingate could easily plan on how to dislocate their adversaries. What the adversaries of Wingate and Lawrence failed to understand, was the importance of the element of time, in the conduct of warfare. As Greene (2006, p. 67) records: "Retreat in the face of a strong enemy is a sign not of weakness but of strength. By resisting the temptation to respond to an aggressor, you buy yourself valuable time-time to recover, to think, to gain perspective. Let your enemies advance; time is more important than space." Ellipsis in comprehension of the role that time performs in an information satiated environment, is also revealed by Thornton (2007, p. 135) who notes specifically that asymmetric opponents generally think and act at a faster pace than large, ponderous forces, thus making asymmetric opponents difficult to defeat. Lawrence and Wingate seem to have instinctively understood the importance of time against space, and that is why both of them always chose to retreat and allow their adversaries to gain territorial space, which for Lawrence and Wingate translated in gaining valuable time for their decision-making processes.

5.6 Ardant Du Picq, Mao tse-Tung and the element of deception

Ardant Du Picq, (1921, p. 13) a French Army officer and military theorist of the mid-nineteenth century argued that: "To conquer is to be sure to overcome. In fine, it is the mind that wins battles, that will always win them, that always has won them throughout the world's history." Mao Tse-tung (1989, p. 23) had also alluded to this point when he remarked that: "The enemy is deceived and again deceived. Attacks are sudden, sharp, vicious, and of short duration. Many are harassing in nature; others designed to dislocate the enemy's plans and to agitate and confuse his commanders. The mind of the enemy and the will of his leaders is a target of

far more importance than the bodies of his troops." Lawrence's Arab Revolt and Wingate's campaigns in Sudan, Palestine, Ethiopia and Burma proved Du Picq's and Mao Tse-tung's observations correct, as it is a fact that both Lawrence and Wingate fought successfully against quantifiably superior forces. Boot (2013, p. 42) has also identified the paradox of how the weak can defeat the strong as the 'nomad paradox'. Yet, the explanation which Boot suggests for the success of the guerrilla paradox is that, it lies largely in the use of hit-and-run tactics emphasizing mobility and surprise, making it difficult for the stronger to bring its full weight to bear. Boot's explanation though is only half-correct. Mobility and surprise cannot guarantee victory. Mobility and surprise are simply the tools, by which dislocation of the enemy is achieved.

Wingate regularly stressed the effectiveness of the element of deception. Lawrence did also acknowledge the importance of deception in the conduct of war. In the examination of our two consecutive case studies, both Lawrence and Wingate though made extensive use of the psychological effect of priming their opponents, which is a phenomenon far more complex than deception. Priming is the process by which the primer, places its victim in an environment that is totally controlled by the primer. Parallelly, the primer blinds the victim by allowing the victim's mind to subdue itself by the buildup of an illusionary feeling of security and self-confidence in the victim's decision-making process. In the case studies examined above, the opponents of both Wingate and Lawrence, were by all accounts more powerful than the task forces of Wingate and Lawrence. Lawrence and Wingate were aware of this but instead of being deterred, they also knew that: "the most powerful are always the most susceptible to deception, since, whether they realize it or not, power breeds arrogance, and arrogance blinds the powerful to things they do not wish to see." (Thornton, 2007, p. 67) As a result, Lawrence and especially Wingate proceeded in building an environment that offered their opponents opportunities of tactical success which subsequently lead to strategic failures.

5.7 Tactical defeat transformed into strategic victory

The pattern of offering your opponent opportunities of tactical success that in the long-term evolve into strategic failures, is another version of the defense-offense concept. In the case of the Arab Revolt, Lawrence did not pursue exactly this method but on the other hand he persisted in using the broader version of the defense-offense concept. Wingate on the contrary favored the technique of luring his opponents in a position in which they acquired tactical superiority in the short term and then transformed his adversary's success into a strategic failure in the long term. This concept was demonstrated especially during the Burma campaign, in which Wingate's Chindits were tactically defeated by the Japanese in the Burmese jungle but succeeded in the long-term as the Japanese failed to conquer Burma during their campaign the following year. This pattern, has also been observed after the conclusion of WWII for the German military. Despite the fact that the Germans had superior tactics and had been more successful than the Allies at the tactical and operational levels of the war, they were defeated at the strategic level, thus losing the war.

5.8 The phenomenon of priming

In the case of the Arab Revolt, Lawrence had primed the Turks and their Germans advisors by allowing them to endorse the hubristic belief that power is a strength and can never be turned into a vulnerability. (Thornton, 2007, p.23) This is clearly depicted by Lawrence's observation during the Arab Revolt in which he remarked that: "The Turks were stupid; the Germans behind them dogmatical. They would believe that rebellion was absolute like war, and deal with it on the analogy of war. Analogy in human things was fudge, anyhow; and war upon rebellion was messy and slow, like eating soup with a knife." (Lawrence, 1935, p. 182-183) Wingate had done the same thing in all of his campaigns. In Sudan and Palestine, he had engraved on the minds of the poachers and the Arab guerrillas that his patrols timeframes and routes were rigid. Misleading them from the beginning, Wingate transformed the tactic of patrolling into ambushing.

Fixation in terms of thinking in a dynamic environment, such as the one that warfare represents, guarantees only one result, and that is nothing more than failure. Ulysses S. Grant, victorious leader of the Union Army over the Confederacy in the American Civil War commented on the dangers that are presented when a mental obsession casts its veil over the mind. In his own words: "Some of our generals failed because they worked out everything by rule. They knew what Frederick did at one place, and Napoleon at another. They were always thinking about what Napoleon would do…. I don't understand the value of military knowledge, but if men make war in slavish observance to rules, they will fail. War is progressive." (Ulysses S. Grant quoted by Greene, 2006, p. 13) In supporting Grant's conclusion, Liang and Xiangsui (2007, p. 182), note that the golden rule, is that of asymmetry, in which: "Apart from the effectiveness it displays when used, asymmetry in itself is a rule of action suggested by the golden rule. Of all rules, this is the only one which encourages people to break rules so as to use rules." Success in the conduct of warfare is not guaranteed by following a pre-determined line of action. Success can only be attained by meticulous planning and by continuous adaptation over the developing circumstances.

Julius Caesar, quoted in 75 BC that: "The greatest enemy will hide in the last place you would ever look." DeBono's (1992) research on creative thinking has concluded that as humans, we are hermetically impervious to decoding what is actually happening, even when we have the capability of having all the relevant information on the subject that troubles us at the time being. "Sometimes creativity is needed even in information analysis. The mind can only see what it is prepared to see." (DeBono, 1992, p. 397) Both Lawrence and Wingate seem to have acknowledged the phenomenon of mind fixation, thus being able to successfully manipulate their opponents actions.

5.9 Propaganda, another tool for priming

In the book 'Propaganda-The Formation of Men's Attitudes', Ellul (1965, pp. 86-87) strains exactly this point of subconscious oblivion of the situational awareness of any situation by giving the following example: "After having read an article on

wheat in the US or on steel in the Soviet Union, does the reader remember the figures and statistics, has he understood the economic mechanisms, has he absorbed the line of reasoning? If he is not an economist by profession, he will retain an over-all impression, a general conviction that 'these Americans or Russians are amazing…They have methods…Progress is important after all, and so on.' Thereafter, what remains with the individual affected by this propaganda is a perfectly irrational picture, a purely emotional feeling, a myth. The facts, the data, the reasoning-all are forgotten, and only the impression remains. And this is indeed what the propagandist ultimately seeks, for the individual will never begin to act on the basis of facts, or engage in purely rational behavior. What makes him act is the emotional pressure, the vision of a future, the myth. The problem is to create an irrational response on the basis of rational and factual elements. That response must be fed with facts, those frenzies must be provoked by rigorously logical proofs. Thus, propaganda in itself becomes honest, strict, exact, but its effect remains irrational because of the spontaneous transformation of all its contents by the individual. We emphasize that this is true not just for propaganda but also for information. Except for the specialist, information, even when it is very well presented, gives people only a broad image of the world. This claim may seem shocking; but it is a fact that excessive data do not enlighten the reader or the listener; they drown him."

Conclusively, both Lawrence's and Wingate's greatest achievements in the conduct of warfare, were not their successes but it was the way by which they achieved their successes. Both of them avoided direct confrontation with their adversaries but chose the indirect approach. It was by far much more effective to dislocate their opponents by directing them in attacking prepared defenses. Both Lawrence and Wingate had shown that they acknowledged the existence and the importance that chaos performed in the conduct of war, thus putting themselves in search of a tool that would allow them to deconstruct chaos and weaponize it in their favor. This tool, they found in the form of the OODA Loop theory. Operating the OODA Loop theory at a faster tempo than their opponents, Lawrence and Wingate were both capable of observing 'inside' the aperiodic patterns of evolving situations, and as

such, entering inside the mind of their opponents. Instead of reacting to their opponent's actions, they aimed at taking the initiative by controlling their opponent's minds through the Reflexive Control theory, thus securing victory in the long-term.

- CHAPTER 6 –
EPILOGUE

6.1 Examining the first theoretical hypothesis

The two theoretical hypotheses that were set in the introduction chapter of this research were:

1) Are the principles of dislocation and exploitation yielded by the synergy of Chaos theory, OODA theory and Reflexive Control theory?

2) Can the idea of victory be fractal to the concept of the state of equilibrium?

Concerning the first hypothesis, the principles of dislocation and exploitation, that Hart pointed as the pillars upon that the IA theory rests, are undeniably yielded by the synergy of Chaos theory, OODA Loop theory and the Reflexive Control theory. The result of the synergy produced by these three theories has been shown in chapters three, four and also in the analysis that followed in chapter five. This research has tried to approach the IA theory from a completely new approach, that combined the method of comparative historical analysis with the insertion of scientific theories that would help deconstruct the IA in an easy to follow way. The combination of these three theories, in order to decipher the IA theory has never been done before. Another point that should be pointed out, regards the theories involved in this research. Excepting the OODA Loop theory, the theories of Reflexive Control and Chaos have yet to be sufficiently researched, especially those possible connections that these theories might hide, with regard to ways of conducting warfare. Research, that most likely will be conducted in the near future, concerning these two theories and their application in the way warfare is conducted, will reveal further elements of the theories, granting us further deconstruction and deeper comprehension of the inner mechanisms of the IA theory.

6.2 Future prospects of Chaos theory

Besides the aperiodic patterns concept that was drawn from Chaos theory, and was used in this research for the purpose of showing that chaos is actually organized, there are many other aspects of Chaos theory that need to be explored. As it was mentioned in this research, deeper comprehension of Chaos theory resulted in the improvement of the financial system and specifically the way stock exchanges are conducted. The same has been done in weather predicting, another field that primarily deals with Chaos theory. Theoretically, focused research on the connection of Chaos theory with the conduct of warfare, or possibly the weaponization of chaos will yield, yet to be undiscovered concepts and possibilities.

6.3 Future prospects of Reflexive Control theory

Concerning the theory of Reflexive Control, this research has exposed one of the weaknesses of this theory. The theory of Reflexive Control is undeniably a tool with great potential when it comes to being used in warfare. Its only weakness though is that Reflexive Control can only be utilized after the dislocation of the enemy. It is for this reason that Reflexive Control theory was found compatible with Chaos theory and the OODA Loop theory. This research has also concluded that under any other circumstances, the chances of independent utilization of Reflexive Control theory successfully, decrease exponentially. Regarding the IA theory, Reflexive Control theory carries out the application of the second principle which is the exploitation of the enemy's dislocation, but Reflexive Control theory is ineffective if not used in accordance with other compatible theories such as the ones suggested in this research.

6.4 Future prospects of OODA Loop theory

Successively, the OODA Loop theory remained the only theory that provided the necessary linkage between Chaos theory and Reflexive Control theory, in the process of deconstructing the IA theory. It is important to note that the OODA Loop theory was originally conceived by Boyd, a man coming from military background,

which aspired to discover a formula that would allow its user to overcome its opponent. Although the primary application of the formula he came up with, was for aerial dogfights, it soon became apparent that the concept of the OODA Loop theory could be applied in land and naval warfare accordingly. Even more interestingly, as more people became accustomed to the OODA Loop theory, the theory found its way into the corporate world. Corporations and especially giant enterprises had discovered in the OODA Loop theory, a tool that enabled them to overcome their opponents in the races of market dominance. As it was mentioned above, the OODA Loop theory was used in the context of this research as the connecting rod between Chaos theory and Reflexive Control theory, emphasizing the importance of time in the decision-making process. From another perspective though, further research of the OODA Loop theory could further unveil the interaction between human psychology and the OODA Loop theory, a point which would have been of great interest, as it was noted multiple times in this research that war still remains a phenomenon in which the human element is fundamental.

Everything that has been developed, either in the material or the immaterial world, it was firstly incepted through the power of the mind. Either through experience or through the mechanisms of creativity, the mind regularly surprises us by allowing us to exceed our own expectations and limitations. Despite the fact that the IA theory has been conceived and recorded as a conception by Hart, it has remained locked in the drawers of those who conduct state policy and most significantly those who conduct war. The IA theory never reached the position that it deserved in the podium of history. It simply remained a theory. As Lawrence wrote in a most revealing letter to Hart in 1933: “With 2000 years of examples behind us we have no excuse, when fighting, for not fighting well.” (Asprey, 1994, p. 190-191)

Throughout this research project, I have to admit that blinded by my own preconceptions, I was obsessed with discovering the secret formula that would make its user, indestructible in war. Even if I had managed to succeed in my quest of the formula, what transfixed my attention was Hart’s reflection in his book ‘Why Don’t We Learn From History’. He observed that “We learn from history that

complete victory has never been completed by the result that the victors always anticipate: a good and lasting peace. For victory has always sown the seeds of a fresh war, because victory breeds among the vanquished a desire for vindication and vengeance and because victory raises fresh rivals." (Hart, 1944, p. 83)

6.5 Examining the second theoretical hypothesis

Regarding the answer of the second theoretical hypothesis, this can be found in Hart's observation of war's unavoidability. Victory is an illusion, only a state of metastability. The state of metastability is what chaos theorists and physicists define as any other stable state of a dynamical system other than the system's state of least energy. Those who conduct war, should always keep that in mind. Those who understand the core of the human nature, clearly comprehend that victory in war, even when attained, is short-lived. It is with these observations in mind that this research came in borrowing the term from physics, a state of equilibrium. With the introduction of atomics physics, it became known that an atom is the smallest particle of an element. Ernest Rutherford had established in 1911 that the mass of the atom is concentrated in its nucleus. He had also proposed that the nucleus was positively charge and that it was surrounded by negatively charged electrons. (Atomic Archive, 2017) Atomic structure suggests that the nucleus which is composed of protons and neutrons is inactive when a state of equilibrium exists between the electric charges of protons, neutrons and the surrounding electrons. This state of equilibrium is disrupted only when there is an increase or decrease of the number or the charge of neutrons or protons that consist the nucleus, or an increase or decrease of the number or the charge of the electrons surrounding the nucleus. By comparison to this analogy, the phenomenon of war should be viewed as the condition of increase-decrease of the number or the charge of either the neutrons, protons or the electrons. The phenomenon of war then, would only lead to a state of metastability. Parallel to the never-ending process of reaching equilibrium in the science of physics, in the real world, the phenomenon of war fulfills the same objective. War is an intermediate phase that always results in a

metastable state. As a result, the concept of victory would only be a fractal to the state of equilibrium.

This point was also shortly stressed in chapter five. Theorists agree that war is usually conducted at three levels, the strategic, the operational and the tactical. The sum of victories at the tactical level or the operational level though, do not guarantee victory at the strategic level. It is he who secures victory at the strategic level that secures complete victory. The issue with the term of complete victory is that in reality, there has never been a complete victory. Although it seems that nobody has yet touched this subject, the phenomenon of war, exceeds its three levels, reaching much furtherer. A victorious war, is not a guarantee of long-term success. On the contrary though, examples of history show that victory can become a self-blinding mirage. Although it might have already been presumed that the second theoretical hypothesis is disengaged from the concept of the IA theory, this is not the case.

It is the comprehension of the concept of victory being fractal to the state of equilibrium that makes the IA theory so thought-provoking. The IA theory is essentially based upon the concept of victory being a fractal of the state of equilibrium. The IA theory does not stress victory as the most important outcome of war. On the contrary, Hart's IA theory focuses on achieving a state of equilibrium between opposing forces, through the subversion of the opponent's will and mind to an illusionary long-term prospect. Hart (1944, p. 87) reflected on the same subject when he commented on Wellington's way of conducting warfare, stating that: "He was the least militaristic of soldiers and free from the lust of glory. It was because he saw the value of peace that he became so unbeatable in war. For he kept the end in view, instead of falling in love with the means. Unlike Napoleon, he was not infected by the romance of war, which generates illusions and self-deceptions. That was how Napoleon had failed and Wellington prevailed."

As Hart had observed after the end of both World Wars, the concept of absolute war did not serve well its utilizers in achieving either their military or political objectives. This came as a result of the influence of Clausewitz's maxims on the

way war was conducted. Even though Clausewitz had emphasized that war was simply a continuation of politics, absolute war, the style that was applied during both World Wars, led to a reversal of the relationship between war as a continuation of politics. As a result, the result of the war, determined future policies. The IA theory though, provided the opportunity of correcting this reversal, and setting once again, the phenomenon of war as a tool of implementation of policies.

6.6 Conclusion

Finally, perhaps the most vital element of the IA theory, lies not in the prescription of how to conduct warfare successfully, but in that it can be applied to all levels of war and extend beyond those into policy itself. For the IA theory's most significant attributes, are its compatibility and applicability at the different levels of war and policy. The IA theory is equally efficient when used at the tactical, operational or strategic levels of war. It is also efficient when used in policy-making. The true value of the IA theory does not degrade as the theory is utilized at different levels. This was remarked in chapter five. In the process of analyzing the IA theory, it was found that the theory which was favored by primitive warriors, had also been successfully employed by Roman generals and later on by Byzantine emperors, confirming that the theory was usable at both the military and political levels of a state's administration.

Hart came to the conclusion that: "There is no panacea for peace that can be written out in a formula like a doctor's prescription. But one can set down a series of practical points; elementary principles drawn from the sum of human experience in all times." (1944, p. 90) Perhaps the only viable option, for humanity to discard the phenomenon of war, is by following Plato's advice of "until either the rulers became philosophers or the philosophers became the rulers, the affairs of mankind would never go right." (1944, date, p. 96) Human history though testifies against the possible eclipse of the phenomenon of war from humanity's future. Nevertheless, this should not deter us from improving the way we conduct warfare. The Indirect Approach theory offers us the opportunity to achieve the objectives

that we set in an enlightened way. It has been in existence and in successful practice since the dawn of warfare. Neglecting it, does not make it inexistent.

BIBLIOGRAPHY

Altfeld M. F. 1985. Uncertainty as a deterrence strategy: A critical assessment, *Comparative Strategy*. [Online]. **5**(1). pp. 1-26. [Accessed 10 April 2017]. Available from: http://dx.doi.org/10.1080/01495938508402679

Ardant Du Picq. 1880. *Battle Studies Ancient and Modern Battle.* 1921 edition. New York: The Macmillan Company.

Arrian. 1865. *The Campaigns of Alexander.* 1958 edition. England: Penguin Books.

Artelli M. J. and Deckro R. F. 2008. Fourth generation operations: principles for the 'Long War', Small Wars & Insurgencies. *Small Wars and Insurgencies.* [Online]. **19**(2). pp. 221-237. [Accessed 10 May 2017]. Available from: http://www-tandfonline-com.ezproxy.lib.gla.ac.uk/doi/pdf/10.1080/09592310802061372?needAccess=true

Asprey R. 1975. *War in the Shadows-The Classic History of Guerrilla Warfare from Ancient Persia to the Present*. 1994 edition. Great Britain: Clays Ltd.

Atkinson J. D. 1965. Liddell Hart and Warfare of the Future. *Military Affairs.* [Online]. **29**(4). pp. 161-163. [Accessed 11 April 2017]. Available from: http://www.jstor.org/stable/1984404

Atomic Archive. 2017. *Introduction to Atomic Physics.* [Online]. [Accessed 10 July 2017]. Available from: http://www.atomicarchive.com/Physics/Physics1.shtml

Bak P. and Chen K. 1991. Self-Organized Criticality. *Scientific American*. [Online]. 264(1). pp. 46-53. [Accessed 20 April 2017]. Available from: https://www.scientificamerican.com/magazine/sa/1991/01-01/

Barnett C. 1999. Basil faulty? *The RUSI Journal.* [Online]. **144**(2). pp. 62-63. [Accessed 30 April 2017]. Available from: http://dx.doi.org/10.1080/03071849908446383)

Beaumont R. 1995. Small Wars: Definitions and Dimensions. *The Annals of the American Academy of Political and Social Science.* [Online]. Vol. **541**. pp. 20-35. [Accessed 4 June 2017]. Available from: http://www.jstor.org/stable/1048273

Blount C. 2009. Modern Air Power and the 1916 Arab Revolt: What Can the Modern Airman Do to Counter Lawrence of Arabia? *Air and Space Power Journal.* [Online]. **23**(3). pp. 50-55. [Accessed 11 April 2017]. Available from: http://www.au.af.mil/au/afri/aspj/apjinternational/apj-c/2010/spr10/Blount.pdf

Bond B. 1976. Liddell Hart's Influence on Israeli Military Theory and Practice. *The RUSI Journal.* [Online]. **121**(2). pp. 83-89. [Accessed 27 April 2017]. Available from: http://dx.doi.org/10.1080/03071847609419269

Boot M. 2013. *Invisible Armies-An Epic History of Guerrilla Warfare From Ancient Times to the Present.* New York: Liveright Publishing Corporation.

Britannica Encyclopedia. 2017. *Haganah-Zionist Military Organization.* [Online]. [Accessed 23 April 2017]. Available from: https://www.britannica.com/topic/Haganah

Callwell. C. E. 1896. *Small Wars: Their Principles and Practice.* 2016 edition. United Kingdom: Endeavour Press.

Clausewitz C. 1832. *On War.* 2007 edition. Great Britain: Oxford University Press.

Chotikul D. 1986. The Soviet theory of reflexive control in historical and psychocultural perspective: preliminary study. *Calhoun-Institutional Archive of the Naval Postgraduate School.* [Online]. pp. 1-127. [Accessed 13 June 2017]. Available from: http://calhoun.nps.edu/bitstream/handle/10945/30190/soviettheoryofre00chot.pdf

Churchill W. 1944. *Letter to Mrs Wingate after Orde Wingate's death*. Shappell Collection. [Online]. [Accessed 15 April 2017]. Available from: http://www.shapell.org/manuscript/winston-churchill-zionism-orde-wingate

Cleary T. 1994. *The Human Element-A Course in Resourceful Thinking.* United States of America: Shambhala Publications Inc.

Colin Gray. 1999. *Modern Strategy.* United Kingdom: Oxford University Press.

Coram R. 2002. *Boyd-The Fighter Pilot Who Changed the Art of War.* United States of America: Back Bay Books.

Corrigan G. 2015. *Douglas Haig: Defeat into Victory.* Germany: Amazon Distribution.

Conant J. B. 1964. Two Modes of Thought. New York: Trident Press

Culham P. 1989. Chance, command, and chaos in ancient military engagements. *World Futures-The Journal of New Paradigm Research.* [Online] **27**(2-4). pp. 191-205. [Accessed 17 April 2017]. Available from: http://dx.doi.org/10.1080/02604027.1989.9972136

Cummins D. 2013. Do you have 'Eyes on the Prize' or 'Target Fixation'?. Psychology Today. [Online]. [Accessed 14 May 2017]. Available from: https://www.psychologytoday.com/blog/good-thinking/201309/do-you-have-eyes-the-prize-or-target-fixation

DeBono E. 1993. *Serious Creativity.* 2015 edition. Great Britain: Clays Ltd.

Diamond J. 2012. *Orde Wingate-Leadership-Strategy-Conflict.* Oxford: Osprey Publishing.

Efraim Karsh and Inari Karsh. 1997. Myth in the Desert, or Not the Great Arab Revolt. *Middle Eastern Studies*. [Online]. **33**(2). pp. 267-312. [Accessed 4 June 2017]. Available from: http://www.jstor.org/stable/4283869

Egan L. 1948. Lawrence and the Arab Revolt. *The Irish Monthly.* [Online]. **76**(903). pp. 396-401. [Accessed 14 June 2017]. Available from: http://www.jstor.org/stable/20515858

Ellul J. 1965. *Propaganda-The Formation of Men's Attitudes.* 1973 edition. United States of America: Vintage Books.

Fergusson B. 1945. Beyond the Chindwin. 2009 edition. United Kingdom: Pen & Sword Military.

Fitzsimmons M. 2006. The Problem of Uncertainty in Strategic Planning. *Survival-Global Politics and Strategy*. [Online]. **48**(4). pp. 131-146. [Accessed 10 May 2017]. Available from: http://dx.doi.org/10.1080/00396330601062808

Freedman L. Ed. 1994. *War.* New York: Oxford University Press.

Freedman L. 2013. *Strategy-A History.* United States of America: Oxford University Press.

Frühling S. 2006. Uncertainty, Forecasting and the Difficulty of Strategy. *Comparative Strategy.* [Online]. **25**(1). pp. 19-31. [Accessed 11 May 2017]. Available from: http://dx.doi.org/10.1080/01495930600639528

Gleick J. 1988. *Chaos-The Amazing Science of the Unpredictable.* 1998 edition. Denmark: Norhaven Paperback.

Gracian B. 1647. *How to Use Your Enemies*. 2015 edition. United Kingdom: Penguin Random House UK.

Greene R. 2006. *The Concise 33 Strategies of War.* 2008 edition. Italy: LEGO S.p.a.

Greene R. 2007. OODA and You. *Power Seduction & War*. [Online]. [Accessed 12 May 2017]. Available from: http://web.archive.org/web/20150310020842/http://powerseductionandwar.com/ooda-and-you/

Guevara E. 1961. *Ο Ανταρτοπόλεμος.* Έκδοση 2005. Αθήνα: Εκδόσεις Άποψη.

Hammond G. T. 2013. Reflections on the Legacy of John Boyd. *Contemporary Security Policy*. [Online]. **34**(3). pp. 600-602. [Accessed 16 May 2017]. Available from: http://www.tandfonline.com/doi/abs/10.1080/13523260.2013.842297

Hart L. 1929. *The Strategy of Indirect Approach.* Great Britain: Faber and Faber Ltd.

Hart L. 1942. *The Way to Win Wars.* London: Faber and Faber Ltd.

Hart L. 1944. *Why Don't We Learn from History?* 2015 edition. Great Britain: Amazon UK.

Hart L. 1965. *The Liddell Hart Memoirs 1895-1938, Vol. I.* New York: G. P. Putnam's Sons.

Hart L. 1966. *The Liddell Hart Memoirs: The Later Years, Vol. II.* New York: G. P. Putnam's Sons.

Harvard Business School. 2010. *Thinking Strategically.* United States of America: Harvard Business School Publishing.

Harvard Business School. Ed. 2011. *On Strategy.* United States of America: Harvard Business School Publishing.

Harvard Business School. Ed. 2013. *On Making Smart Decisions.* United States of America: Harvard Business School Publishing.

Hasik J. 2013. Beyond the Briefing: Theoretical and Practical Problems in the Works and Legacy of John Boyd. *Contemporary Security Policy*. [Online]. **34**(3). pp. 583–599. [Accessed 18 May 2017]. Available from: http://www.tandfonline.com/doi/full/10.1080/13523260.2013.839257

Henry Kissinger. 1982. *Years of Upheaval*. Boston: Little, Brown & Co.

Herbig K. L. 1986. Chance and uncertainty in On War. *Journal of Strategic Studies*. [Online]. **9**(2-3), pp. 95 116. [Accessed 19 May 2017]. Available from: http://www.tandfonline.com/doi/abs/10.1080/01402398608437260?queryID=

Heuer R. J. 1999. *Psychology of Intelligence Analysis*. United States of America: Central Intelligence Agency.

Holmes T. M. 2007. Planning versus Chaos in Clausewitz's On War. *Journal of Strategic Studies*. **30**(1). pp. 129-151. [Accessed on 19 April 2017]. Available from: http://dx.doi.org/10.1080/01402390701210855

Howard M. 1965. The Theory and Practice of War. Ed. United States of America: Indiana University Press.

Howard M. 1972. *Grand Strategy-History of the Second World War.* Vol. 4. London: Her Majesty's Stationery Office.

Howe I. 1962. T. E. Lawrence: The Problem of Heroism. *The Hudson Review*. [Online]. **15**(3). pp. 333-364. [Accessed 4 June 2017]. Available from: http://www.jstor.org/stable/3848742

Hughes T. 2001. The Cult of the Quick. *Aerospace Power Journal.* [Online]. **15**(4). pp. 57–68. [Accessed 23 April 2017]. Available from: http://www.airuniversity.af.mil/Portals/10/ASPJ/journals/Volume-15_Issue-1-4/win01.pdf

Ionov M. D. 1994. Psikhologicheskie aspekty upravleniia protivnikom v antagonisticheskikh konfliktakh (refleksivnoe upravlenie) (Psychological aspects of controlling the enemy during antagonistic conflicts [reflexive control]). *Prikladnaia ergonomika (Applied Ergonomics).* Vol. **1** (Special Issue). pp. 44-45.

Jackson L. Legatum Institute. 2015. Revisions of Reality: The Three Warfares-China's New Way of War. *Beyond Propaganda Series.* [Online]. pp. 5-15. [Accessed 24 April 2017]. Available from: http://stratcomcoe.org/legatum-institute-information-war-chinas-three-warfares-natos-narratives

Jha A. 2013. The Guardian. *What is the Second Law of Thermodynamics?* [Online]. [Accessed 24 June 2017]. Available from: https://www.theguardian.com/science/2013/dec/01/what-is-the-second-law-of-thermodynamics

Kahneman D. 2011. *Thinking Fast and Slow.* Great Britain: Clays Ltd.

Kirby. S. W. 1961. *The War Against Japan, Vol. III: The Decisive Battles.* London: HMSO.

Korybko A. 2015. *The Indirect Adaptive Approach to Regime Change.* People's Friendship University of Russia. Institute for Strategic Studies and Predictions. [Online]. pp. 1-116. [Accessed 26 April 2017]. Available from: https://orientalreview.org/wp-content/uploads/2015/08/AK-Hybrid-Wars-updated.pdf

Laity M. Legatum Institute. 2015. NATO and the Power of Narrative. *Beyond Propaganda Series.* [Online]. pp. 22-28. [Accessed 23 April 2017]. Available from: http://stratcomcoe.org/legatum-institute-information-war-chinas-three-warfares-natos-narratives

Larson R. H. 1980. B. H. Liddell Hart: Apostle of Limited War. *Military Affairs*. [Online]. **44**(2.) pp. 70-74. [Accessed 12 April 2017]. Available from: http://www.jstor.org/stable/1986601

Lawrence T. E. 1920. *Ανταρτοπόλεμος στην Έρημο-Η εξέλιξη μίας εξέγερσης. (Revolt in the Desert).* Έκδοση 1998. Αθήνα: Εκδόσεις Άγρα.

Lawrence T.E. 1935. *Seven Pillars of Wisdom.* 1997 edition. Great Britain: Clays Ltd.

Leonenko S. 1995. Refleksivnoe upravlenie protivnikom (On Reflexive Control of the Enemy). *Armeyskiy sbornik* (*Army Digest*). Vol. **8.**

Liang Q., Xiangsui W. 2007. *Unrestricted Warfare-China's master plan to destroy America.* New Delhi: Natraj Publishers.

Lord Mahon. 1829. *The Life of Belisarius-The Last Great General of Rome.* 2006 edition. United States of America: Westholme Publishing.

Lung H. 2006. *Mind Control-The Ancient Art of Psychological Warfare.* New York: Citadel Press Books.

Machiavelli N. 1532. *The Prince.* 2015 edition. Poland: Amazon Fulfillment.

Mackinlay J. 2002. *Globalization and Insurgency.* The International Institute for Strategic Studies. Adelphi Paper 352. London: Oxford University Press.

Mahoney J. and Rueschemeyer D. 2003. Comparative Historical Analysis in the Social Sciences. *Cambridge University Press*. [Online]. pp. 3-14. [Accessed 19 April 2017]. Available from: http://content.schweitzer-online.de/static/catalog_manager/live/media_files/representation/zd_std_orig__zd_schw_orig/002/352/762/9780521816106_content_pdf_1.pdf

Makhnin V. L. 2013. Reflexive Processes in Military Art: The Historico-Gnoseological Aspect. *East View Press-Journal of Military Thought.* [Online]. **22**(1). pp. 31-46. [Accessed 15 April 2017]. Available from: http://www.eastviewpress.com/Journals/MilitaryThought.aspx

Mann S. 1992. Chaos Theory and Strategic Thought. *Parameters-US Army War College Quarterly.* [Online]. **22**(3). pp. 54-68. [Accessed 11 April 2017]. Available from: http://glasgow.summon.serialssolutions.com.ezproxy.lib.gla.ac.uk/search?s.

fvf%5B%5D=ContentType%2CJournal+Article&s.q=Chaos+Theory+and+Strategic+Thought+#!/search?ho=t&fvf=ContentType,Journal%20Article,f&l=en-UK&q=Chaos%20Theory%20and%20Strategic%20Thought%20

Marquis S. 1997. *Unconventional Warfare-Rebuilding U.S Special Operations Forces.* Washington: Brookings Institution Press.

Maurice de Saxe. 1757. *Reveries on the Art of War.* Dover 2007 edition. Mineola: Dover Publications.

McLeod S. 2009. *Jean Piaget.* Simply Psychology. 2015 edition. [Online]. [Accessed 14 June 2017]. Available from: https://www.simplypsychology.org/piaget.html

McRaven W. 1995. *Spec Ops-Case Studies in Special Operations Warfare: Theory and Practise.* 1996 edition. United States of America: Presidio Press.

Megginson L. C. 1963. Speech at the convention of the Southwestern Social Science Association. [Online]. [Accessed 17 July 2017]. Available from: http://quoteinvestigator.com/2014/05/04/adapt/

Meyers J. 1977. Xenophon and Seven Pillars of Wisdom. *The Classical Journal*. [Online]. **72**(2). pp. 141-143. [Accessed 12 June 2017]. Available from: http://www.jstor.org/stable/3297085

Miller W. 1955. Old Man's Advice to Youth: 'Never Lose a Holy Curiosity. *LIFE Magazine*. [Online]. **Vol. 38** (18), p. 64. [Accessed 14 June 2017]. Available from:

https://books.google.com.cy/books?id=dlYEAAAAMBAJ&printsec=frontcover&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false

Mitzen J. and Schweller R. L. 2011. Knowing the Unknown Unknowns: Misplaced Certainty and the Onset of War. *Security Studies*. [Online]. **20**(1). pp. 2-35. [Accessed on 17 June 2017]. Available from: http://dx.doi.org/10.1080/09636412.2011.549023

Musashi M. 1645. *The Book of Five Rings.* 1993 edition. Colorado: Shambhala Publications.

NASA. 2017. Second Law of Thermodynamics. [Online]. [Accessed 16 June 2017]. Available from: https://www.grc.nasa.gov/www/k-12/airplane/thermo2.html

Nimmo B. Legatum Institute. 2015. The Case for Information Defence: A Pre-Emptive Strategy for Dealing with the New Disinformation Wars. *Beyond Propaganda Series.* [Online]. pp. 29-38. [Accessed 9 April 2017]. Available from: http://stratcomcoe.org/legatum-institute-information-war-chinas-three-warfares-natos-narratives

Nye J. 2004. *Soft Power-The Means to Success in World Politics.* Canada: Public Affairs.

Osinga F. 2007. *Science, Strategy and War – The Strategic Theory of John Boyd*. New York: Routledge.

Perry B. 2015. Non-Linear Warfare in Ukraine: The Critical Role of Information Operations and Special Operations. *Small Wars Journal.* [Online]. [Accessed 8 April 2017]. Available from:

http://smallwarsjournal.com/jrnl/art/non-linear-warfare-in-ukraine-the-critical-role-of-information-operations-and-special-opera

Robinson L. 2004. *Masters of Chaos-The Secret History of Special Forces.* United States of America: Public Affairs.

Rosen P. 1991. *Winning the Next War-Innovation and the Modern Military.* New York: Cornell University Press.

Royle T. 1995. *Orde Wingate-A Man Of Genius, 1903-1944.* 2010 edition. London: Frontline Books.

Stanford Encyclopedia of Philosophy. 2013. *Gödel's Incompleteness Theorems.* [Online]. [Accessed 5 June 2017]. Available from: https://plato.stanford.edu/entries/goedel-incompleteness/

Stanford Encyclopedia of Philosophy. 2001. The Uncertainty Principle. [Online]. [Accessed 3 June 2017]. Available from: https://plato.stanford.edu/entries/qt-uncertainty/

Sharp G. 1993. *From Dictatorship to Democracy-A Conceptual Framework for liberation.* 2012 edition. London: Serpent's Tail.

Shashkov S. 2011. *The theory of 'manageable chaos' put into practise.* [Online]. [Accessed 12 April 2017]. Available from: http://www.strategic-culture.org/pview/2011/03/01/the-theory-of-manageable-chaos-put-into-practice.html

Smith R. 2005. *The Utility of Force-The Art of War in the Modern World.* 2006 edition. England: Clays Ltd.

Stevens M. 2016. *The Art of Psychological Warfare.* Great Britain: Amazon UK.

Storr J. 2001. Neither Art nor Science – Towards a Discipline of Warfare. *The RUSI Journal.* [Online]. **146**(2). pp. 39-45. [Accessed 15 April 2017]. Available from: http://www.tandfonline.com/doi/abs/10.1080/03071840108446627

Sun Tzu. *The Art of War.* 1988 edition. Boston: Shambhala Publications Inc.

Taleb N. 2007. *The Black Swan-The Impact of the Highly Improbable.* 2010 edition. England: Clays Ltd.

Tarver L. J. 1978. In Wisdom's House: T. E. Lawrence in the Near East. *Journal of Contemporary History.* [Online]. **13**(3). pp. 585-608. [Accessed 16 June 2017]. Available from: http://www.jstor.org/stable/260210

The Economist. 2009. *High Frequency Trading-Rise of the Machines.* [Online]. [Accessed 10 July 2017]. Available from: http://www.economist.com/node/14133802

Thomas L. 1924. *With Lawrence in Arabia.* 2017 edition. United States of America: Skyhorse Publishing.

Thomas T. 2004. Russia's Reflexive Control Theory and the Military. *The Journal of Slavic Military Studies.* [Online]. **17**(2). pp. 237–256. [Accessed 19 June 2017]. Available from: http://www.tandfonline.com/doi/full/10.1080/13518040490450529

Thomas T. 2015. Russia's Military Strategy and Ukraine: Indirect, Asymmetric—and Putin-Led. *The Journal of Slavic Military Studies*. [Online]. **28**(3). pp. 445-461. [Accessed 20 June 2017]. Available from: http://dx.doi.org/10.1080/13518046.2015.1061819)

Thomas T. Legatum Institute. 2015. Psycho Viruses and Reflexive Control: Russian Theories of Information-Psychological War. *Beyond Propaganda Series.* [Online]. pp. 16-21. [Accessed 16 April 2017]. Available from: http://stratcomcoe.org/legatum-institute-information-war-chinas-three-warfares-natos-narratives

Thornton R. 2007. *Asymmetric Warfare.* United Kingdom: Polity Press.

Thucydides. 431 BC. *History of the Peloponnesian War.* 1972 edition. London: Penguin Classics.

Trager F. N. 1961. The Chindits and Marauders in Wartime Burma: Review Article. *Pacific Affairs.* [Online]. **34**(1). pp. 62-66. [Accessed 23 June 2017]. Available from: http://www.jstor.org/stable/2753045

Tulloch D. 1972. *Wingate in Peace and War.* United Kingdom: The Book Service.

Ueshiba M. 1992. *The Art of Peace.* Canada: Shambhala Pocket Classics.

U.S Army Special Command. 2014. *Counter-Unconventional Warfare.* Poland: Amazon Fulfillment.

US Marine Corps. 1989. *Mao Tse-tung on Guerrilla Warfare.* Great Britain: Amazon UK.

Waldman T. 2010. 'Shadows of Uncertainty': Clausewitz's Timeless Analysis of Chance in War. *Defence Studies*. **10**(3). pp. 336-368. [Accessed 25 April 2017]. Available from: http://dx.doi.org/10.1080/14702436.2010.503678

Whittingham D. 2012. Savage warfare: C.E. Callwell, the roots of counter-insurgency, and the nineteenth century context. *Small Wars & Insurgencies*. [Online]. **23**(4-5). pp. 591-607. [Accessed 27 June 2017]. Available from: http://www.tandfonline.com/doi/abs/10.1080/09592318.2012.709769

Williamson M., Mansoor P. Ed. 2012. *Hybrid Warfare-Fighting Complex Opponents from the Ancient World to the Present.* New York: Cambridge University Press.

Wilson J. 1990. *Lawrence of Arabia: The Authorized Biography of T. E. Lawrence.* United Kingdom: Atheneum.

Wise D. 1982. Experts speculate on future electronic learning environment. *InfoWorld*. [Online]. **Vol 4** (16), p. 6. [Assessed 23 June 2017]. Available from: https://books.google.com.cy/books?id=azAEAAAAMBAJ&q=%22best+way%22&redir_esc=y&hl=en#v=snippet&q=%22best%20way%22&f=false

Ηράκλειτος. *Ηράκλειτος Άπαντα.* Έκδοση 2010. Αθήνα: Εκδόσεις Ζήτρος.