Game Theory in a Napoleonic Context

Establishing Napoleon's Utility and Application to the 1805 War of the Third Coalition

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Abstract

Game theory has existed in the fields of mathematics and economics for over 60 years. This thesis assesses its viability for use in the field of history, and in particular, in the Napoleonic era. It does this by analysing the opening phase of the 1805 War of the Third Coalition, fought between France and the Allies. It starts by examining the existing literature on game theory in the Napoleonic era. It then analyses game theory in order to extract concepts from the theory that have value in a military setting. Third, it makes use of primary and secondary sources to define Napoleon Bonaparte's motivational drives. Finally, it uses these drives and game theory in order to assess whether Napoleon's opening strategy in the War of the Third Coalition was the best strategy to select. The study finds that his utility was influenced by a core drive: narcissism, and by his primary drives: 'thirst for power', 'elimination of boredom', immortality, and glory. It also concludes that 'opportunism' affected his decision making processes. The study found that Napoleon selected his opening strategy in the War of the Third Coalition with precision, and that game theory is limited in its current state, but that, despite this, it has value for the study of history.

The great majority of men attend to what is necessary only when they feel a need for it – the precise time when it is too late.

– Napoleon

Chapter I: Introduction

In 1944, mathematician John von Neumann and economist Oskar Morgenstern published *Theory of Games and Economic Behaviour.*[1] The book introduced the idea of applying strategies that had been used in parlour games, such as Poker and Bridge, into the field of economics. It also introduced the idea of applying mathematics in competitive and co-operative engagements in order to better analyse decisions and optimise solutions. Lastly, it defined a concept called 'utility' which described a person's interest in an outcome and quantified this concept by measuring the 'risk the person was willing to take to obtain it'.[2] Collectively, the axioms and concepts defined by von Neumann and Morgenstern have become known as Game Theory. This study proposes to apply these concepts in a military analysis of the Napoleonic War of the Third Coalition in order to establish a game theoretic criterion for future analyses of the same subject.

The application of game theory to a military context is not new. In 1950, author John McDonald published *Strategy in Poker, Business and War*, which was a book that extended the ideas of two articles he wrote that

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[1] John von Neumann and Oskar Morgenstern, *Theory of Games and Economic Behavior*, Commemorative edn (Princeton: Princeton University Press, 2007), Kindle ebook.

[2] Ken Binmore, *Game Theory: A Very Short Introduction* (Oxford: Oxford University Press, 2007), l. 334. How much risk a player is willing to take can be measured by asking each player in a game to assign a numerical value to each possible outcome of a game. In cases where this approach is not available (for example, in history research), utility has to be established by a thorough examination of a player's psyche to in order to assign utility values to outcomes for them.

appeared in finance magazine Fortune in 1948-49.[3] A part of McDonald's book applied game theory in a military context. Also in 1950, O. Gross and R. Wagner published an article for the RAND Corporation called *The Continuous Colonel Blotto Game*.[4] Gross and Wagner used Euclidean geometry to analyse a simple military example that included two generals with different sized armies vying for control over two points. The winner of the game was the general who managed to gain control over both points. The particular focus was on playing the game repeatedly. It was an extension of the version of the original creator of the Colonel Blotto game, Emile Borel, in whose work the game was played only once.[5] The repeat game is particularly important when applying game theory to the study of history as most decisions that were made in history led to a further requirement for related decisions. Again in 1950, a colonel in the United States Air Force, O.G. Haywood, published *Military Doctrine of Decision and the Von Neumann Theory of Games*.[6] In it, he analysed contemporary United States military doctrine and then suggested ways in which Game Theory might be applied to the subject in order to improve United States military prowess in future conflicts.

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[3] John McDonald, *Strategy in Poker, Business and War*, W.W. Norton edn (New York: W.W. Norton & Company, 1996).

[4] O. Gross and R. Wagner, 'The Continuous Colonel Blotto Game', *RAND Corporation*, <http://www.rand.org/content/dam/rand/pubs/research_memoranda/2006/RM408.pdf> [accessed 17 April 2013].

[5] Emile Borel, "La Théorie du jeu et les Équations Intégrales à Noyau Symétrique," *Comptes Rendus de l'Acàdemie des Sciences* 173 (1921), pp. 1304-1309.

[6] Colonel O.G. Haywood, *Military Doctrine of Decision and the Von Neumann Theory of Games* (Santa Monica: RAND Corporation, 1950) <http://www.rand.org/pubs/research_memoranda/RM528.html> [accessed 17 April 2013].

The application of game theory in a Napoleonic context is also not new. In 2009, French professor Philippe Mongin published *A Game Theoretic Analysis of the Waterloo Campaign and some Comments on the Analytic Narrative Project.*[7] Mongin explored a particular decision made by Napoleon in the Waterloo Campaign, which was whether or not to detach Grouchy in pursuit of the retreating Prussians after Ligny. Napoleon had the choice of either detaching Grouchy in pursuit, or keeping his 33,000 men with the main army under his command. After using game theory to analyse the situation, Mongin concluded that Napoleon made the correct decision, which was to detach Grouchy in pursuit of the Prussians. Mongin also used *A Game Theoretic Analysis of the Waterloo Campaign* as a platform for analysis of the style of writing known as the analytic narrative. The analytic narrative is a method of description that extracts events or decisions in the past that contain sufficient detail to conclude whether or not someone acted in an optimal way. The analytic narrative often incorporates mathematics as a tool of analysis.

This study proposes to further the work of Mongin by applying game theory in another Napoleonic context, that of the War of the Third Coalition. The War of the Third Coalition is particularly suited to game theoretic analyses as it was rich with important military decisions that were made by participants including Napoleon, and the decisions often had dramatic repercussions. The war also contained the campaign known as 'The Ulm Campaign' in which the Austrian General Mack made the unfortunate

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[7] Philippe Mongin, *A Game Theoretic Analysis of the Waterloo Campaign and some comments on the Analytic Narrative Project* (Paris: Hautes Études Commerciales, 2009). <http://www.hec.fr/var/fre/storage/original/application/dce1d70d3ee3305fdeda9bafef908dd2.pdf> [accessed 17 April 2013].

decision to garrison Ulm, thereby cutting himself off from Russian reinforcement. Lastly, the campaign included the Battle of Austerlitz, arguably Napoleon's greatest strategic achievement. The outcome of this battle relied on a combination of factors, two of the primary ones being, first, the game theory employed by Napoleon, and second, the game theory employed erroneously by the Allies.

In order to extract decisions suitable for game theoretic analysis, it was necessary to conduct a study of the War of the Third Coalition itself. Three main books were used for this purpose: British historian David Chandler's *The Campaigns of Napoleon*, French historian Henry Lachouque's *Napoleon's Battles*, and British scholar Ian Castle's recent *Austerlitz: Napoleon and the Eagles of Europe*.[8] These three studies provided an excellent platform for analysis, Chandler's work for its focus on strategy and tactics, Lachouque's work for the same reasons, but from a French perspective, and Castle's work because of its inclusion of the activity of the French spy Charles Schumacher, whose role in the War of the Third Coalition provides explanations for many game theoretic actions previously analysed as 'erroneous decisions', rather than sound reasoning.

In order to gain an understanding of game theory a number of texts have been examined. The first of these is von Neumann and Morgenstern's *Theory of Games*. Von Neumann and Morgenstern's text incorporated set theory, which, at the time of the publication of *Theory of Games*, was a

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[8] David Chandler, *The Campaigns of Napoleon* (New York: Macmillan, 1966); Henry Lachouque, *Napoleon's Battles: A History of His Campaigns* (London: Allen & Unwin, 1964); Ian Castle, *Austerlitz: Napoleon and the Eagles of Europe* (Yorkshire: Pen & Sword Books, 2005), Kindle ebook.

relatively new method for mathematical investigation of social phenomena (particularly useful because set theory enables the representation of infinity, an aspect which is crucial to game theory when discussing branches of possibility). The second text, first published in 1970, and authored by game theorist Morton D. Davis, is called *Game Theory: A Nontechnical Introduction.*[9] This text has been chosen for two reasons. The first is that there is a link between von Neumann and Morgenstern's *Theory of Games* and *Game Theory: A Nontechnical Introduction.* Oskar Morgenstern wrote the preface to Davis' book and provided input to his project, therefore the book is closely aligned with the original *Theory of Games.* The second reason Davis' book has been chosen is that it employs a simplified tool of mathematical representation, that of matrices. Matrices allow for a more visual display of game theoretic scenarios than set theory, at the expense of both versatility and complexity. The third game theoretic book that has been studied is economist Ken Binmore's excellent *Game Theory: A Very Short Introduction.* Binmore's book serves as an entry point into the study of the subject. Lastly, the Penguin edition of *On War* has been studied as it includes an introduction by Russian game theorist, Anatol Rapoport.[10] On War investigates many aspects of Napoleonic Era Warfare, and is invaluable to the study as it was written by military theorist, Carl von Clausewitz, an army officer who participated in many battles in the Napoleonic Wars. The combination of Rapoport and Clausewitz in one volume provides a vital link between the Napoleonic era and game theory.

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[9] Morton D. Davis, *Game Theory: A Nontechnical Introduction*, 3rd edn. (Mineola: Dover Publications, 1997), Kindle ebook.
[10] Carl von Clausewitz, *On War*, 3rd edn. (London: Penguin Books, 1982).

The structure of this study is organised around three questions. The first asks if game theory can be usefully employed in the study of history. The second question asks, 'To what extent did game theory play a role in the selection of Napoleon's opening strategy in the War of The Third Coalition'. The final question asks if game theory has relevance to the field of strategic military analysis.

The aim of this chapter is to provide a summary of game theory, and to examine its relevance in military settings. It will introduce experiments that have been performed by game theoreticians, such as Richard Brayer, and describe the reasons these experiments have been studied. Lastly, it will introduce game theoretic concepts, such as 'zero-sum and non-zero-sum games', 'mixed strategies and pure strategies', 'equilibrium points', and 'utility'.

Game theory is a theory of decision making.[1] In a game theoretic scenario a number of participants, called 'players', make decisions based on a predefined set of choices, called 'strategies'. The outcome of these decisions are defined as some value, usually algebraic or numerical, and this value is called the 'payoff'. The Encyclopaedia Britannica provides an exact description of the nature of game theory:

> [A] branch of applied mathematics that provides tools for analysing situations in which parties, called players, make decisions that are interdependent. This interdependence causes each player to consider the other player's possible decisions, or strategies, in formulating his own strategy. A solution to a game describes the optimal decisions of

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[1] Morton D. Davis, *Game Theory: A Nontechnical Introduction,* 3rd edn. (Mineola: Dover Publications, 1997), Kindle ebook, l. 169.

the players, who may have similar, opposed, or mixed interests, and the outcomes that may result from these decisions.[2]

There are a number of types of games that can be played in game theory, and the simplest of these is the 'one-person game'. In this game there is only one player, and the decisions he makes affect only himself. In *Theory of Games*, John von Neumann refers to an example of this type of game as a 'Robinson Crusoe model', a naming convention selected because the player in a one-person game is isolated from any form of social interaction.[3] Even though the one-person game is the simplest type of game, von Neumann identifies a number of issues that need to be taken into account in a one-person game analysis. The first problem is that when a player is confronted with a number of different possibilities, one of which must be selected at the expense of the others, the player *should* base his decision off obtaining 'maximum satisfaction'. The problem is that if each possibility represents something tangible, for example, a physical object (von Neumann used 'commodities' as an object in his economics example), satisfaction could come from either obtaining an object or obtaining an object *instead* of other objects. The second problem is one of quantification of the 'maximum'. If satisfaction comes from a player's mind, then the final weight a player

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[2] 'Game Theory', *Encyclopaedia Britannica* <http://www.britannica.com/EBchecked/topic/224893/game-theory> [accessed 17 April 2013].

[3] Similar to the character in Daniel Defoe's novel *The Life and Strange Surprizing Adventures of Robinson Crusoe, of York, Mariner: Who lived Eight and Twenty Years, all alone in an un-inhabited Island on the Coast of America, near the Mouth of the Great River of Oroonoque; Having been cast on Shore by Shipwreck, wherein all the Men perished but himself. With An Account how he was at last as strangely deliver'd by Pirates* (London: Printed for the Ship in Pater-Noster Row, 1719). Crusoe was marooned on a desert island and eventually came to thank god for his situation in which nothing was missing except human society; von Neumann and Morgenstern, l. 1425.

attaches to the value of an object is rarely the product of a single universal variable, which can be equally applied to other objects involved in a decision, but of a number of variables, each with a different value in the player's mind. In order to accurately assess a Robinson Crusoe model, it is necessary to know the value a player places on each variable relevant to the decision being made in the game being played. Because a game theoretic analyst might not always know all the associated values a player places on each variable, von Neumann and Morgenstern came up with a simplified function that defined the value of a decision based on the 'risk' a player was prepared to take to get an outcome. They called the value of this risk 'utility', and it served as an effective method for ignoring individual values of relevant variables, while still maintaining a degree of accuracy when defining the overall value a player placed on obtaining an object. One benefit of utility is that it can be applied outside the Robinson Crusoe model and into other game theoretic models with more than one player.

One type of these 'multiple player' games is the zero-sum two-person game. In this game, there are two players playing 'against' each other, and the strategies each selects is, in at least some way, dependent on the strategies selected by the other player. In this type of game, one player always loses what the other player gains, and the payoffs due to both players, therefore, always sum to zero, hence the term 'zero-sum game'.[4] In the one-person game, 'nature' affects a player's decision, but never purposely manipulates events in order to force a player to alter his strategy. The primary difference

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[4] Payoffs are the value each player receives at the end of the game. A value differs depending on the context; in economics, the value is usually money, in war the value can be victory, defeat, a stalemate, or simply a change in the tactical equilibrium between two opposing armies.

between the one-player game and the two-person game (and games with n >
2 players) is that, 'while decision makers [in the one-player game] are trying
to manipulate their environment, [in the two-player game] their
environment is trying to manipulate them'.[5] The 'environment' includes
other players. Troop movement and response is an example of this
manipulation in a military context; if a commander moves his troops to a
different location, particularly one that compromises an enemy's own
position, the commander must expect a response from the enemy
commander.

A similar type of game to the two-player zero-sum game is the 'two-person
non-zero-sum game'. This game also features two players, and both players
are affected by the other player's decisions; the chief difference between the
two games is that payoffs do not sum to zero in the non-zero-sum game.
Selected strategies can lead to a positive payoff for both players, so some
non-zero-sum games are not competitive. In non-zero-sum games, some
strategies lead to a positive payoff for both players, but the payoff received
is skewed in favour of one player. Games such as these incorporate a
combination of cooperative and competitive behaviour because there are
different ways to play the game; the first is to play selfishly, that is, a player
selects only the strategy which leads to the highest payoff, ignoring the
other player's strategy. Second, a player can choose to play altruistically,
that is, deferring to select a personally dominant strategy in favour of a
smaller, but still profitable payoff.[6] Third, in repeated games, a player can
take into account both his and his opponent's utility and play a strategy

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[5] Davis, l. 202.

[6] A dominant strategy is a strategy that leads to the highest payoff.

that leads to the greatest possible payoff for the group rather than for an individual.[7] In repeat games, a player can play what is a called a 'mixed strategy', represented by a ratio or a fraction, that allows him to play a dominant strategy some of the time (usually most of the time), and a dominated strategy the rest of the time. Mixed strategies have significance in the military context; it can allow a commander to minimise losses, and causes his strategies to remain a mystery to the opposing general. The British general, The Duke of Wellington employed a mixed strategy at Salamanca, choosing the dominated strategy of jostling for position (exhausting his troops), and then switching to the dominant strategy of capitalising on an overextended French line, when a set of ridges allowed the strategy to become viable.

Two other types of game are zero-sum and non-zero-sum 'n-person games'. In these games, there are more than two players, and the strategies employed by each player are similar to those used by players in two-player games. In n-person games, each player has to take into account the strategies of a greater number of players and, therefore, calculating optimal strategies is more difficult. Davis states the difference between two-person non-zero-sum games and n-person games as: 'in two-person, non-zero-sum games, the [players have] to share control of their own fate with a partner but they [have] no control over their partner's fate, which they can use as a threat'.[8] In the n-person game, players are generally denied this threat, and

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[7] A repeated game is a game that is played more than once.
[8] Davis, l. 2214. This lack of control over their partner's fate can be used as a threat because, if a player chooses to play selfishly, the 'partner' can choose to play selfishly in response, thus depriving the other player of a greater payoff. In games where communication is allowed, a player can threaten to play selfishly in an effort to force the other player to continue playing their current strategy.

the solution to this lack of control is to form a coalition with another player or players within the 'group'.

Some game theory games can be 'solved'. In a solvable game, it is possible to predict the outcome of a game before any player has selected a strategy. Such a prediction is made possible with the assumption that each player in a solvable game is playing 'rationally', that is, he is always selecting the strategy that leads to his highest possible payoff. In terms of finding a solution, one-person games are the easiest to solve. This is a direct consequence of the logic of game theory; one-person games have the fewest players, and thus the fewest variables to take into account. The next simplest are two person zero-sum games, followed by two-person, non-zero sum games, and followed by n-person games. Von Neumann was the first to find a solution for zero-sum games when, in 1928, he published a paper called *On the Theory of Parlour Games,* which introduced the 'minimax theorem'.[9] The theory proved that it was possible to minimise maximum loss, and inversely, that it is possible to maximise the minimum gain (maximin) when playing for payoffs, and that players will always play minimax or maximin strategies when they are available as long as they are playing 'rationally'. As games get more complex, Davis observes that 'convincing solutions are harder to come by. It is as though there were a perverse, quasi-conservation law at work: the more important the game, the more applications the game has in the real world, the more difficult it is to analyse'.[10]

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[9] John von Neumann: "Zur Theorie der Gesellschaftsspiele", *Mathematische Annalen* 100 (1928), pp. 295–300.
[10] Davis, l. 113.

Solving non-zero-sum games is possible, but the lack of a clear direction in these games sometimes makes predicting an exact outcome difficult. A solution concept for non-cooperative, non-zero-sum games was published by American mathematician John Nash in 1950.[11] In his short paper, Nash showed that in games in which each player is assumed to know the equilibrium strategies of the other players, and no player has anything to gain by changing his own strategy unilaterally while the other player keeps his strategy unchanged, then the current set of strategy choices and the corresponding payoffs constitute a 'Nash equilibrium'.[12] In cases where both players deviate from a dominant strategy in the same round of a game, the Nash equilibrium no longer applies because both players may benefit equally from the new payoffs, or even improve their position. In cooperative, non-zero-sum games, where no communication is allowed between players, prediction can be more difficult as players may deviate from equilibrium strategies for the purposes of trying to convince another player that better payoffs lie in the selection of alternate strategies.

One game theoretic concept that has value in military analyses is the notion of perfect versus imperfect information. In a game classified as a 'game of perfect information', each player 'knows exactly what is going on at all times'.[13] The game of Chess and the Japanese game of Go are examples of games of perfect information because all of the pieces as well as the board are visible to both players at all times. In a game classed as a 'game

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[11] A non-cooperative game is a game where the players are not cooperating, but they stand to lose something by selecting a strategy that increases their own payoff at the expense of another player's payoff.

[12] John Nash, "Equilibrium points in n-person games", *Proceedings of the National Academy of Sciences*, (1950), 36(1):48-49.

[13] Davis, l. 257.

of imperfect information', each player is 'to some extent, kept in the dark'.[14] Card games like Poker and Bridge are examples of games of imperfect information because no player knows exactly what lies in the other players' hands. Games of imperfect information are often more complex than games of perfect information because they require a shift in focus from a general strategy that encompasses the two elements of 'self' and 'environment' to a focus on finding out as much information as possible; the construction of a general strategy is still required, but only after a compilation of this information.[15] In war terms this concept is similar to an existing one, the 'fog of war'. Carl von Clausewitz was one of the first to describe this phenomena in *On War* when he said, 'War is the province of uncertainty; three-fourths of those things upon which action in War must be calculated, are hidden more or less in the clouds of great uncertainty. Here, then, above all a fine and penetrating mind is called for, to search out the truth by the tact of its judgment'.[16]

Game theory games can be represented in a number of 'forms'. The first type of representation is 'extensive form'. In extensive form a game is represented by a 'tree' diagram with 'nodes' representing a point where a player has to make a decision, and 'branches' representing different strategies. Games where a player has to make decisions in a specific sequence are represented in extensive form. Some game theory games are also represented by matrices. Matrix representation is called 'strategic' or

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[14] Davis, l. 257.

[15] One of Napoleon's military adversaries, Arthur Wellesley, the 1st Duke of Wellington, reflected on the importance of obtaining information in a military setting: 'All the business of war, and indeed all the business of life, is to endeavour to find out what you don't know by what you do; that's what I called "guessing what was at the other side of the hill" '.

[16] Carl von Clausewitz, *On War*, 3rd edn. (London: Penguin Books, 1982), p. 140.

'normal' form. Matrix representation makes it easier to decipher optimal solutions to games, and is therefore the primary mode of representation in game theory. In cases where games are being analysed theoretically, the branch of mathematics known as set theory is used. Set theory is useful for constructing analyses of complex scenarios because it can represent both physical objects, as well as intangible objects, such as thought processes. It also allows the grouping of multiple similar objects.

When representing zero-sum games in matrix form, the payoffs due to player 'B' are omitted from the matrix.[17] Only player 'A's' payoffs are displayed. This is because player B always loses the same amount that player A gains, and vice versa. For example, if both players choose strategy B, and the corresponding matrix entry has a payoff of 5 for player A, player B gets -5. If both players choose strategy A, and the corresponding matrix entry has a payoff of -3, player B gets 3.

Two-person game theory games can be thought of as lying in a continuum. At one end of the spectrum lie zero-sum games. Because one person's loss is another person's gain, these games can be seen as purely competitive. At the other end lies non-zero-sum games, where both players always gain equal payoffs no matter what strategies are used. Because there is no way (or reason) to 'hurt' the other player, these games are called 'cooperative games'. Most games sit somewhere between these two extremes, that is, they involve a combination of cooperative and competitive behaviour.

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[17] Player A is always on the 'left side', Player B is always on the 'top' of the matrix. Player A's strategies are represented by the rows and player B's by the columns.

At first glance, war appears to be a purely competitive game. What one general gains, another loses. However, battles rarely produce a game where the ratio of gains to losses is equivalent, and there are a number of reasons for this. The first is that societies produce armies that place different values on victory and loss. Napoleon provided good summaries of his interpretation of the relevance of this phenomenon in the Napoleonic era:

> A common French soldier is more interested in winning a battle than is a Russian officer. He invariably attributes the major part of a victory to the unit in which he serves. The art of retreating is more difficult with French troops than with Russian ones. A single lost battle takes away a Frenchman's strength and courage, weakens his trust in his superiors and pushes him to insubordination. Russian, Prussian, and German soldiers stay at their posts from a sense of duty; the French soldier, from a sense of honour. The former are almost indifferent to defeat, the latter are humiliated by defeat.[18]

Regardless whether or not Napoleon's dictums were true, Napoleon believed them to be, and in the context of game theory, the belief of the commander outweighs the reality of the situation. This is a primary reason that intelligence gathering is of such importance to a commander in a war situation, the primary aim being the construction of a set of beliefs based on the information available. Another reason was is not purely competitive is because commanders hold a degree of autonomy in the field, and a general's interests do not necessarily always coincide with the interests of a

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[18] Napoleon in *The Mind of Napoleon: A Selection from his Written and Spoken Words*, ed. by Christopher J. Herold (New York: Columbia University Press, 1955), p. 216.

commander's nation state. The total destruction of an enemy army is often desired by a nation state as it brings a guarantee of peace and beneficial terms. However, a commander engaging in this directive stands to lose reputation among his own men if he shows no mercy to the opposing army. In the Italian Campaign of 1796, the role of the French army as dictated by the French Directory was to maintain a foothold in Northern Italy. The role of the Army of Italy, as far as Napoleon was concerned, was to eradicate Austrian resistance in the theatre, with a corollary aim of forcing the Austrians to transfer extra troops to the theatre in the hopes of thinning the Austrian lines east of the Rhine, thereby facilitating a successful thrust into Austrian territory by the main French armies in the Austrian theatre.[19] In 1797, the Directory maintained that Napoleon should try to break the siege of Mantua and force the Austrians from Italy. Napoleon, on the other hand, had the primary aim of driving the Austrian army to the Austrian capital of Vienna, thereby forcing the Austrians to come to peace on French terms. The final reason war is not purely competitive is that there are situations where a course of action can be seen as beneficial by opposing armies. An example of this comes in the form of a ceasefire. A ceasefire often allows generals time to reinforce units, tend to the wounded, and recover morale. Often a ceasefire is more beneficial to one general than it is to another, but the fact that both generals tend to gain some benefit from a ceasefire makes the relationship between enemy generals somewhat symbiotic, and wars involving ceasefires non-zero-sum.

Since the introduction of game theory in von Neumann and Morgenstern's *Theory of Games*, many experiments have been conducted by game

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[19] The commander in chief was Napoleon.

theorists in an effort to understand player behaviour. One of the key behaviours game theory researchers have studied is the ability of players to take into account, and respond to, other player's strategies. In 1964, researcher Richard Brayer had subjects repeatedly play a game that gave players a choice of three strategies.[20] Subjects were either told they were playing against an experienced player or they were told that their opponent would play randomly, but in fact they invariably played against the experimenter.

EXPERIMENTER

		A	B	C
	a	11	-7	8
SUBJECT	b	1	1	2
	c	-10	-7	21

Figure 1: Brayer's experiment[21]

In Brayer's game, Davis states that strategy b is the most logical strategy for the subject to play if they think their opponent is intelligent. This is because strategy b is the only strategy that guarantees the subject a gain. The experimenter, on the other hand, should never play C as this leads to a loss no matter what the subject plays. Strategy A seems logical for the experimenter until the subject's thought process is factored in: having established that the experimenter will never play C the subject should choose b because playing a leads to a loss for the subject when the experimenter chooses B. The subject therefore should always play b, and the experimenter should always play B. (b, B) are therefore equilibrium strategies, and the payoff of 1 is an equilibrium point. Davis mentions that what actually happened in Brayer's experiment was very different from

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[20] Davis, l. 764.
[21] Taken from Davis.

what should have happened under the conditions of rational play: most subjects ignored what they were told about their opponent and responded only to how the opponent played. Post experimental interviews revealed that 'players couldn't anticipate the experimenter's choice of strategy B. In fact, *more than half the subjects* felt that the experimenter was stupid for playing B and settling for a loss of 1'.[22] In other words, many of the test subjects failed to adequately assess which strategies constituted the most logical course of action for the opponent.

Another important factor that has an influence on player behaviour is communication. In a game with two players, I and II, player I has the choice of two strategies, a or b. Strategy a has a payoff of 5 or 0, depending on what player II plays, and strategy b has a payoff of 6 or 1, depending on what player II plays. Player II also has a choice of two strategies, A or B. Strategy A has a payoff of either 5 or 0 and strategy B has a payoff of either 6 or 1 depending on what player I plays. In a game played repeatedly and where no communication between players is allowed, it is logical for player I to play strategy b because a payoff of either 6 or 1 is better than a payoff of 5 or 0. This is especially so considering that if player II plays A, player I gets the highest possible payoff of 6. However, in cases where communication is allowed (and the aim of the game is to get the highest total combined payoff), it is better to play a and for player II to play A so that they can each get a payoff of 5 for a combined payoff of 10 on each round.

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[22] Davis, l. 774. Davis' italics.

| | PLAYER II | |
	A	B
PLAYER I a	(5, 5)	(0, 6)
b	(6, 0)	(1, 1)

Figure 2: Communication affecting strategy selection.[23]

There are some differences between the way players behave in games played once, and games played repeatedly. The first is that in games played only once, most players choose to play aggressively and selfishly, selecting the strategy that leads to the highest possible payoff at the expense of another player's gain.[24] Behaviour also changes depending on the number of times a game is repeated. If a game is repeated an infinite number of times, players tend towards cooperation. The reason for this is biological. In a situation where a species places a higher value on survival than on eliminating competition for resources, they often defer to other species. Scavenger species, such as vultures, display this behaviour when a predatory species obtains a kill. The vultures wait until the predators have finished feeding before they take their share of the meal. In games that are repeated, but where there are a finite number of turns, it is more logical for players to play cooperatively for most of the turns and then aim to maximise personal gain at the expense of cooperation in the last few turns.[25] This is because an opposing player's threats lose significance as the game approaches

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[23] Taken from Davis, l. 1293.

[24] Jacob K. Goeree and Charles A. Holt, 'Ten Little Treasures of Game Theory and Ten Intuitive Contradictions', *The American Economic Review* 91, 5 (December, 2001), p. 1403.

[25] Reinhard Selten, 'The Chain Store Paradox', *Theory and Decision* 9, 2 (1978), pp. 127–159.

termination. The last turn, in particular, is almost universally played selfishly by intelligent rational players.

Players also take into account their current personal position when selecting strategies in game theoretic scenarios. This often results in a deviation from a dominant strategy. In an example where players are playing for money, their financial position is often taken into account. In a game with two players, I and II, player I has three strategies to choose from. Strategy a with a payoff of $1 million, strategy b with payoffs of $10 million or $ 0, and strategy c with payoffs of $0 or $10 million. Player II has two strategies to choose from, strategy A with payoffs of $1 million, $10 million or $0, and strategy B with payoffs of $1 million, $0 or $10 million. The minimax strategy for player I is to play a mixed strategy of b one half the time and c one half the time for an average return of $5 million for each time the game is played.

		PLAYER II	
		A	B
	a	$1 million	$1 million
PLAYER I	b	$10 million	$0
	c	$0	$10 million

Figure 3: Personal position influencing behaviour.[26]

However, if the game is played once and player I is bankrupt, he might prefer to go with strategy a which gives a guaranteed payoff of $1 million. On the other hand, if the game is played only once, but player I is very rich, he might opt for strategy b or c, given that he has 'nothing to lose'. If he ends up with a payoff of $0, it does not matter as he still walks away rich. In a military setting, ceasefires are similar to this type of game. Rather than

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[26] Davis, l. 816.

risk losing everything through aggression on the part of the attacker or risk losing everything through inadequate time to prepare on the part of the defender, both sides may opt for a ceasefire which leads to a lower gain, but without the risks incurred by an attack which comes too early. Of course, one of the sides may end up profiting by a non-ceasefire, and this is where a careful calculation of losses versus gains in relation to an army's physical condition can decide a course of action.

At its simplest, game theory is a theory of decision making. A more complex, but more complete explanation is that game theory is a branch of applied mathematics that provides tools for analysing situations in which parties, called players, make decisions that are interdependent. Game theory was first formalised and given a system of axioms by John von Neumann and Oskar Morgenstern in 1944, when they published *Theory of Games and Economic Behaviour*. This book focussed on the application of game theory to the subject of economics. Because of the competitive nature of game theory in n > 1 games, and the strategic thought process involved, it was soon applied by various scholars in the military context. Chief among these was O. G. Haywood, a United States Air Force colonel. Haywood was among the first to realise that elements that had been employed in the economic context could be applied in the military context, the primary ones being the principles of perfect and imperfect information, communication affecting strategy selection, and personal position influencing behaviour. The competitive nature of the two-person zero-sum game meant that it could represent a military battle between two belligerents. However, the fact that wars were rarely fights to the death (leading to a loss for the vanquished that directly corresponded to the gain for the victor), meant that

war was a non-zero-sum game. The ambiguity surrounding corresponding gains and losses becomes more prevalent as the military scenario is escalated from tactical battles to the overall strategy in a theatre. The ability of a commander to request a ceasefire, and of both commanders to negotiate, often makes it unclear which side is gaining more from a transaction, and decreases the chances that both sides lose in a transaction. At the campaign level, the introduction of third parties, such as governments, blurs the picture even further. At any time a government can step in and change the circumstances when its foreign interests no longer coincide with the objectives of its armies. Game theory also predicates a crucial difference between the application of the subject to economics and the application of the subject in a military context. In economics, a player is usually selecting the strategies that lead to the greatest possible gains. In a two-player scenario this does not necessarily preclude co-operation with an 'opposing' player provided both sides gain from the selected strategy. In war, 'players' can do the opposite: selecting a dominated strategy for the purposes of deceiving the opponent. While selecting dominated strategies can be done in economics, it rarely produces the beneficial outcomes that result from selecting a similar strategy in a military setting. One of the benefits of game theory is that it allows a military commander to practise the art of prediction. In war, knowing what an opponent is going to do before he does it can lead to the creation and implementation of an adequate counter-response. The 'Nash equilibrium', created by mathematician John Nash in 1950, was a solution concept of the closest it is possible to get to von Neumann's minimax theorem in two-person non-zero-sum games. As long as a player has nothing to gain by

unilaterally changing his strategy, it is rational for him to continue using his current strategy.

Chapter III: Establishing Napoleon's Utility

This chapter will use psychoanalysis to establish Napoleon's motivational drives so that they can be applied to his utility for application in game theoretic scenarios. It will draw upon a wide range of sources, including psychoanalytic sources, such as historian Avner Falk's *Napoleon Against Himself* and historian J. Holland Rose's *The Personality of Napoleon*, primary sources, such as the *Letters and Documents of Napoleon*, edited by the historian J. Eldred Howard, and Christopher J. Herold's *The Mind of Napoleon*, other general sources, such as British military historian David Chandler's *The Campaigns of Napoleon*, and personal sources, such as Napoleon's *Memoirs*.

Napoleon was the central figure in the War of the Third Coalition. The path that led him to his position as the central figure began in August 1805 when reports reached him that the Austrians were preparing for war.[1] He immediately began negotiating with Prussia in order to gain her support for the coming war against the Allies.[2] At the same time, and without waiting for a Prussian reply, he turned to matters of grand strategy.[3] The Allies had plans to attack into Hanover in the north, Bavaria in the east, and North Italy in the south. Napoleon assessed that the effect of the flank attacks in the north and south would be marginal provided he took the initiative and attacked the Allied forces gathering in Bavaria. The *Grande Armée* had been

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[1] Ian Castle, *Austerlitz: Napoleon and the Eagles of Europe* (Yorkshire: Pen & Sword Books, 2005), l. 817.
[2] Castle, l. 817.
[3] Castle, l. 831.

preparing for an invasion of England since 1803 and were thus well placed for a full-scale invasion of Bavaria once the central Allied army occupied the country. In the north, Napoleon left a token force of 30,000 on the coast in case of a British invasion and withdrew the rest of his forces stationed in Hanover, bringing them south to link up with the *Grande Armée*. He assigned the capable Marshal Massena to take command of an army of 65,000 in order to hold Allied forces in Italy in the south. On 26 August he issued orders for the *Grande Armée* to move to positions on the French-Hanoverian border, thus pre-empting the Allied attack plan and replacing it with his own attack plan. Napoleon's strategy was to place a 'dummy' army along the border of the Black Forest in Southern Bavaria. This was the standard invasion route from France into Bavaria at the time and it was the most direct route from Paris. Napoleon hoped this strategy would entice the Allies to advance to the territory around the town of Ulm in order to prevent his forces from exiting the Black Forest and gaining a foothold in Bavaria. The ruse worked, and Austrian forces under Prince Ferdinand occupied territory east of the Black Forest. With the bulk of the rest of his army Napoleon then proceeded into Northern Bavaria via an alternate route. Successful execution of this plan would have two possible outcomes. It would either force the Austrian army from Bavaria or, if the Austrians remained oblivious to the location of the *Grande Armée*, would result in the encirclement of the Austrian army around Ulm. The latter outcome would yield the greatest possible strategic result. As it happened, this was the outcome that eventuated.[4] From this point onwards, the Allied strategy centred on response to Napoleon's actions and movements, and Napoleon

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[4] Castle, l. 1399.

therefore became the chief architect of the events of the war. He had the initiative.

As a result of Napoleon's prime position in the War, it is necessary to examine his behaviour in order to establish his motivations. Haywood draws a summary about the relationship between behaviour and decision-making when he states, 'The reasoning processes of human beings are inherently subjective. Our response to a situation is conditioned by our past experiences, present environment and interests, and personal temperament'.[5] The purpose of establishing Napoleon's motivations is to enable the construction of a table of values from which it will be possible to draw a relationship (if one exists) between the table of values and the decisions Napoleon made in the War. The outcome will be a utility value that can be assigned to matrices in game theoretic analyses of each decision made. This process will be aided by the sheer volume of literature that has been published on Napoleon.

The problem with establishing Napoleon's utility in decisions, however, is that he was a complex individual, and this is reflected in the ambiguity surrounding his aims and his motivations. The psycho-historian Avner Falk provides an excellent summary of past interpretations of Napoleon's character:

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[5] Colonel O.G. Haywood, *Military Doctrine of Decision and the Von Neumann Theory of Games* (Santa Monica: RAND Corporation, 1950) <http://www.rand.org/pubs/research_memoranda/RM528.html> [accessed 17 April 2013], p. 76.

Many scholars have observed that Napoleon was a very complex individual, full of "contradictions" and "strange character traits." Most of his biographers were baffled by his multifaceted personality; many of them confessed that they did not really understand him. One French scholar, Jean Thiry (1899-1980), wrote a twenty-eight-volume history of Napoleon and his time without plumbing his subject's psychological depths. Thiry's countryman Frédéric Masson (1847-1923), who published dozens of works on Napoleon, many of them multivolume, confessed in his preface to the twelfth volume of his thirty-fourth work, Napoleon et sa famille: It may seem hardly credible that after devoting thirty years to the study of one man I have come not to admire him more but to have even less comprehension of this extraordinary being".[6]

Falk mentions that the American psychoanalyst, Abraham Brill, also conducted a psychological analysis of Napoleon, and Brill found that:

> there is no doubt that Napoleon represents the very acme of primitivity and that we are fascinated by his embodiment of those primitive qualities we can scarcely acknowledge.[7]

Falk himself finds that much of Napoleon's life was dictated by flawed parenting. He refers to Napoleon's subconscious interpretation of his mother, Letizia, as the 'bad mother' and that he eventually imprinted this subconscious impression of the 'bad mother' on his native country, Corsica,

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[6] Avner Falk, *Napoleon Against Himself: A Psychobiography* (Charlottesville: Pitchstone Publishing, 2007), p. 12.
[7] Falk, p. 12.

by psychological 'association'.[8] Napoleon's mother breastfed his siblings but not him, leaving this task up to a wet nurse. Napoleon's father, Carlo, was a politician and was often away on business, and consequently contributed little to the raising of Napoleon. This meant Napoleon was essentially a solo-parent child. The result of this state of familial affairs was that Napoleon was brought up under a harsh mother, and was rarely able to spend time with his father.

The association between his mother and Corsica was reinforced by the rejection he faced at the hands of Corsican nationalists. In a sense, the leader of the Corsican nationalist party, Pasquale Paoli, was a representation of this Corsican opposition; Napoleon ended up going to war against Paoli after Paoli refused to take up Napoleon's idea of uniting with France.[9] A result of this mind-altering process was that Napoleon increasingly detached himself from Corsican affairs and began to associate more with France. By 1797 this process was almost complete. His designs on Corsica were revealed in a letter sent to the Directory:

> In order to tie Corsica irrevocably to the [French] Republic, the following must be done: (1) the island must always be divided into two departments; (2) not a single Corsican must be employed in a government position; (3) about fifty children should be selected and distributed among the various educational institutions of Paris. This

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[8] Falk, p. 74. For a definition of the principle of association, see Robert C. Bolles, *The Story of Psychology: A Thematic History* (Belmont: Brooks/Cole Publishing, 1993), p. 68. Bolles defines associationism as: 'the idea that after two events have been experienced together, one of them will evoke the idea of the other one'. An 'event' in psychological terms is a general term for 'two things'.
[9] Falk, p. 78-80.

last method, which is very inexpensive, must be regarded as essential … [In Paris, the children] will receive a better education than at home, and, above all, they will be taught to love France to the exclusion of all else.[10]

In 1809 he provided more evidence of his close association with France. While in conversation with the politician Roederer, he commented on the actions of his brother Joseph, whom he had made the King of Spain:

> This is another thing I reproach [Joseph] with: he has become a Spaniard … The king [of Spain] must be French; Spain must be French. It is for France I have conquered Spain – conquered her with French blood, French limbs, French gold. I am wholly French by attachment as well as by duty. I do nothing except from duty and love of France. I have dethroned the [Spanish] Bourbons only because it was in the interest of France to insure the future of my dynasty. I had no other aim but the glory and the power of France. My whole family must be French. When, last winter, in Mantua, Lucien dared speak to me as to a foreigner, I said to him, "Go away, you wretch, out of my sight! All is finished between us!"[11]

His conversion was essentially total. By 1810, he was able to write simply, 'My axiom is: France before everything'.[12]

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[10] Herold, p. 179.
[11] Herold, pp. 178-79. Lucien was another of Napoleon's brothers.
[12] Herold, p. 178.

At the core of Napoleon's behaviour lay his narcissism. This was not the traditional version of narcissism that began and ended with vanity and selfishness, it was a narcissism that enabled him to reflect objectively on his own abilities and achievements; what is today defined as a 'healthy narcissism'.[13] That he thought highly of himself is evidenced in a number of interactions he had with contemporaries. In a letter to his first wife, Josephine, he said, 'you must submit to every one of my whims…to all your complaints I have the right to answer with the eternal "I". I am apart from everybody, I accept no one's conditions'.[14] The reality of that statement became apparent in a letter written in 1806, when he said, 'my wife could have died in Munich or Strasbourg and it would not have interfered for a quarter of an hour with the execution of my plans'.[15] In 1810, while in the presence of the court, he said to his small nephew, Louis Napoleon:

> Remember always that, in whatever position my policy and the interests of my Empire may place you, your first duties are to me, your second duties to France; all your other duties, even those toward the nations that I may entrust to you, come only in third place.[16]

In 1817, while in exile, he said in conversation, 'Bah! The main thing is oneself'.[17] Napoleon had a firm belief in himself and in his superiority from a young age. When he was nine or ten years old:

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[13] See Ronnie Solan, *The Interaction Between Self and Other: A Different Perspective on Narcissism.* Psychoanalytical Study of the Child, 54: 193-215 (1999).
[14] Herold, p. 7.
[15] Herold, p. 7.
[16] Herold, pp. 7-8.
[17] Herold, p. 7.

one "brute of a master" found him reading in bed after lights out and tried to punish him by forcing him to wear a coarse, brown, homespun monk's habit and to eat his lunch kneeling at the refectory door. Suddenly Napoleon had a fit of rage, nausea, and vomiting. When the angry quartermaster tried to force him to kneel, Napoleon rolled over on the floor, his whole body contorted, sobbing and screaming, "In my family we kneel only to God! N'est-ce pas, Maman! Only to God! Only to God!"[18]

Falk interprets Napoleon's fit as 'unconsciously screaming at his own, absent mother'.[19] Unconsciously, 'the punitive "brutish master" stood for his mother, and his vomiting may have been an unconscious attempt to rid himself of her unbearable image within himself'.[20] The problem with Falk's interpretation lies in the statement, N'est-ce pas, Maman! (Isn't it, Mama!). The colloquial reference to his mother (mama) points to a subconscious affection for his mother, rather than disaffection. Falk also concludes that Napoleon's fit was a response to a feeling of helplessness, but seeking his mother's approval was his method of dealing with the helplessness of the situation and establishes her in Napoleon's subconscious as a primary authority figure. She was someone who Napoleon felt affectionate enough towards that he sought her approval. The opening quote in historian Andre Castelot's biography on Napoleon reads, 'My success, and everything good I have done, I owe to my mother'.[21] The ingredient that is missing from Falk's

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[18] Falk, p. 43.
[19] Falk, p. 43.
[20] Falk, p. 44.
[21] Napoleon in Andre Castelot, *Napoleon* (Ishi Press: 2009), p. 1.

interpretation of the relationship between Napoleon and his mother is Napoleon's intelligence. Even at a young age he displayed remarkable intellectual ability. He wrote a eulogy on his father to his Great Uncle when he was fifteen, part of which reads: 'You have lost in him an obedient and grateful nephew. You know better than I how much he loved you. I will even dare to say that through his death our country has lost an enlightened and disinterested citizen, That dignity with which he has several times been honoured shows the confidence his compatriots had in him, and yet heaven lets him die, and where? A hundred leagues from home, in a strange country, far from all he held most dear'.[22]

The union of intelligence and narcissism produced remarkable self-analytic capabilities. Napoleon readily admitted, for example, that he was a tyrant. While in exile on Saint Helena in 1816, he said, 'It is a fact that my destiny is the inverse of other men's. Ordinarily a man is lowered by his downfall; my downfall raises me to infinite heights. Every day strips me of my tyrant's skin, of my murderousness and ferocity'.[23] On another occasion he said, 'I rule only through the fear I inspire'.[24] He also knew that he was a charlatan when it came to religion and politics. A statement he made in conversation in 1800 reveals much of his approach regarding these subjects:

> My policy is to govern men the way the great majority wants to be
> governed. This, I believe, is the only way in which it is possible to
> acknowledge the sovereignty of the people. By making myself

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[22] Howard, p. 15.
[23] Herold, p. 274.
[24] Desmond Seward, *Napoleon and Hitler* (London: Constable and Company, 1996), p. 219.

Catholic I brought the war in the Vendée to an end. By becoming a Moslem I established myself in Egypt. By acting ultramontane I won the minds of the Italians. If I governed a nation of Jews, I should restore the temple of Solomon. Thus I shall talk freedom in the free part of Santo Domingo; I shall confirm slavery in the Ile de France [Mauritius] and even in the slave part of Santo Domingo – with the reservation that I shall soften and limit slavery wherever I maintain it and shall restore order and discipline wherever I maintain freedom.[25]

He knew that he was nothing more than human, subject to ordinary human vice. He said to his foreign minister, Talleyrand, in 1813:

You must know that I am not in the least afraid of committing an act of cowardice if it were useful to me. Look here, at bottom there is nothing either noble or base in this world. My character possesses all those qualities that are capable of strengthening my power and of deceiving those who imagine that they know me. Frankly, I am a coward, in deed I am – essentially a coward. I give my word of honour that I would not experience the least repugnance toward committing what the world calls a dishonourable action.

The political observer, Madame de Stael, spent much time engaging in conversation with Napoleon in private and semi-private situations. Even though she disliked Napoleon she commented objectively on him in her book, *Considerations on the Principal Events of the French Revolution.* In one section, she wrote:

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[25] Herold, p. 79.

Far from recovering my confidence by seeing Bonaparte more frequently, he constantly intimidated me more and more. I had a confused feeling that no emotion of the heart could act upon him. He regards a human being as an action or a thing, not as a fellow-creature. He does not hate more than he loves; for him nothing exists but himself; all other creatures are ciphers. The force of his will consists in the impossibility of disturbing the calculations of his egoism; he is an able chess-player, and the human race is the opponent to whom he proposes to give checkmate. His successes depend as much on the qualities in which he is deficient as on the talents which he possesses. Neither pity, nor allurement, nor religion, nor attachment to any idea whatsoever could turn him aside from his principal direction. He is for his self-interest what the just man should be for virtue; if the end were good, his perseverance would be noble.[26]

Glory was also a primary motivational drive for Napoleon, and it can be separated into two elements. The first element was the glory of France. The second element was his personal glory, and the social aspect of Napoleon's genius engendered a concealment of the direct espousal of his personal ambition in relation to this drive. It was a concept that corresponded closely with both his narcissism and his ambition. The secretary, Bourrienne, related a conversation Napoleon had with Madame de Clermont-Tonnerre

[26] Germaine de Stael, *Considerations on the Principal Events of the French Revolution*, ed. Aurelian Craiutu (Indianapolis: Liberty Fund, 2008), p. 271.

that revealed something of the relationship between his opinion of himself, glory, and also his game theory:

> "Madame de Clermont-Tonnerre, what do you think of me?" It was a difficult matter to reply to so sudden an apostrophe. "Why general", she said after a moment's hesitation, "I think you are like a clever architect who does not want anyone to see the monument he is building until it is completely finished. You are building behind a scaffolding that you will take down when you have finished." – "Yes, Madam, that's exactly so," Bonaparte said with incredible vivacity. "You are right! … I always live two years ahead of the present."[27]

The question of the exact nature of the 'monument' is left open by both Madame de Clermont-Tonnerre and Napoleon. However, the vivacity of Napoleon's reply suggests that he believed the completion of it would enhance his reputation and bring him glory.

In the few times he directly mentioned his personal glory, he resorted to poetic prose. The following reflection was said to have been found, written in Napoleon's hand, among some scraps of paper after his death:

> A new Prometheus, I am nailed to a rock to be gnawed by a vulture. Yes, I have stolen the fire of Heaven and made a gift of it to France. The fire has returned to its source, and I am here!

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[27] Herold, p. 272.

The love of glory is like the bridge that Satan built across Chaos to pass from Hell to Paradise: glory links the past with the future across a bottomless abyss. Nothing to my son, except my name![28]

Prometheus was a Titan in Greek mythology who, among other things, stole fire back from the 'Father of the Gods', Zeus, gifting it back to humanity. In retaliation, Zeus punished Prometheus by chaining him to a rock where, each day, an eagle (the emblem of Zeus) was sent to the rock to gnaw at his liver. Due to Prometheus' immortality as a titan, his liver regrew overnight, and the process would begin anew with the bird's return each day. Prometheus' primary features were his intelligence and the perception of him in Greek culture as a champion of humanity. In the Enlightenment era (c. 1600-1850), the Prometheus myth was modified to enhance the intelligence element of Prometheus' being. It can be established with heuristics that if Napoleon was invoking the simplistic Theogony version of the Prometheus myth, he was extracting the 'champion of humanity' element for public comparison between Prometheus and himself, while assuming the public would automatically acknowledge the similarity in intelligence.[29]

In the second line of the note, 'yes I have stolen the fire of Heaven and made a gift of it to France', he modified the Prometheus myth for modern consumption by couching it in terms of Christianity (Zeus is substituted for Heaven).

[28] Herold, p. 281.

[29] See E. F. Beall, 'Hesiod's Prometheus and Development in Myth', *Journal of the History of Ideas*, Vol. 52, No. 3 (Jul. - Sep., 1991), pp. 355-371, for an analysis of the development of the myth between the earlier *Theogony*, and the later *Works and Days*, both written by Hesiod.

In the third line he referred to his failure to unite Europe and the result of his failure, exile. 'Fire' in the context of the note was a collective term for the virtues of republicanism; liberty, equality and freedom.[30] There was no reference to England in the note, suggesting that Napoleon did not, as Falk suggests, maintain an underlying hatred of the English, but the vulture in the first line represented either England, his jailer Hudson Lowe, or was a collective term for the Allies.[31]

In the fourth line, 'The love of glory is like the bridge that Satan built across Chaos to pass from Hell to Paradise: glory links the past with the future across a bottomless abyss', he was referring, in the first part of the sentence, to the pleasing mental state the pursuit of glory put him in.[32] Without the pursuit of glory he would have had nothing (chaos). The 'bottomless abyss' is the chasm which contained the remains of both those who strove for glory and never attained it, as well as those whose motivation did not provide them with the determination to aim for it. Of course, glory, in the general sense, has an ambiguous meaning, but as far

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[30] He is taking credit for supplying these values to France even though they were supplied by the French Revolution. More particularly he is taking credit for bringing peace while maintaining these values, something the early leaders of the revolution, such as Danton and Robespierre, failed to do.

[31] Falk, pp. 92, 171, 175, 237-8, 276, 278, 281, 427-8, 437, 488. Napoleon referred to the British as 'those perfidious islanders' at one point, as 'a nation of shopkeepers' at another. However, for Napoleon, England was nothing more than a source for the unification of the public opinion against a common enemy. He had no qualms about seeking political asylum with the British in 1815 when he terminated his career. Hitler was to deploy similar propaganda against the Jews, over 130 years later. See Seward, pp. 124-25, for an analysis of the differences in opinion of the Jews between Napoleon (positive) and Hitler (negative). Napoleon had no reason to hate the Jews, but with a history of hostility between England and France, hatred towards Britain was something he could rely on for gaining public support.

[32] What would be called today 'euphoria', which is produced by the release of chemical endorphins in the brain.

as Napoleon was concerned the only kind of glory that mattered was that which was situated at the highest tier of society; a political and military renown of sufficient consequence that it was recorded for posterity. On the surface, the final sentence, 'Nothing to my son, except my name!' appeared to be a damning indictment of a deterioration of his moral faculties, and a signifier of the mental and physical distance between himself and his son. However, the statement was the opposite, it revealed the value he placed on the results of his labour toward glory. Embellishing his son with this result indicated the value he placed on glory; by leaving his son nothing but his glory, he considered it to be the most valuable item he had to bequeath. It also indicates the esteem with which he held his son; to his son he left his most valuable item.

Napoleon was ambitious, a fact that can be established by a number of decisions he made, including his decision to return to France and attempt a coup d'état in 1799.[33] The extent of his ambition can be established by the number of decisions he made that resulted in greater power. Upon becoming First Consul he decided to counterpose the plans for new government constructed by the politicians Sieyes and Daunou, in order to extract the elements from each that would consolidate his power.[34] For four years from 1799 he worked to bring peace to Europe, and was instrumental in bringing about the Treaty of Amiens in 1802.[35] The result of this was that in August 1802 France was at peace, the perfect time to reinforce the ideals

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[33] Michael Glover, *The Napoleonic Wars: an illustrated history* (New York: Hippocrene Books, 1979), p. 69.
[34] Antoine-Claire Thibaudeau, 'Creation of the Consular Government,' in *Napoleon: Symbol for an Age, A Brief History with Documents*, ed. by Rafe Blaufarb (New York: Bedford/St. Martin's, 2008), pp. 54–56.
[35] Glover, p. 82.

of the revolution by affirming his intent to remain First Consul for only ten years. Instead of doing this he authorised a referendum in 1803 to have him acclaimed First Consul for life.[36] He followed this in 1804 with a plebiscite to have him declared 'Emperor of the French'.[37] A statement that described the depths of his ambition was made to Las Cases while in exile on the isle of Saint Helena in 1816:

> Is there any point on which I could be attacked and on which a historian could not take up my defence? ... My ambition? Ah, no doubt he will find that I had ambition, a great deal of it – but the grandest and noblest, and perhaps, that ever was: the ambition of establishing and consecrating at last the kingdom of reason and the full exercise, the complete enjoyment, of all human capabilities! And in this respect the historian will perhaps find himself forced to regret that such an ambition has not been fulfilled, has not been satisfied...[38]

A behaviour that has not been recorded in a significant volume of texts on Napoleon was his desire to become immortal. This was not biological immortality, but immortality based on glory attained via an analysis of himself conducted by posterity. He once said:

> What is a great reputation? A big noise. The more noise you make, the farther it will go. Laws, institutions, monuments, nations, all this

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[36] Glover, p. 86.
[37] Glover, p. 97.
[38] Herold, p. 273.

passes – but the noise it makes continues to vibrate through other generations.[39]

In 1800 or 1801, when a mission from the pope was negotiating the Concordat in Paris, he said to his secretary Bourrienne, 'Guess what they are holding out to me. The salvation of my soul! But as far as I am concerned, there is no immortality but the memory that is left in the minds of men'.[40] Along similar lines he said in a letter to his brother Jérôme in 1802, 'Die young and I shall accept your death – but not if you have lived without glory, without being useful to your country, without leaving a trace of your existence; for that is not to have lived at all'.[41] Also in 1802, he wrote to General Leclerc, 'Everything on earth is soon forgotten, except the opinion we leave imprinted on history'.[42] The message that persisted across these statements was a sincere desire to be remembered.

Outwardly, Napoleon was a figure of passion and drive, and the foundation of this activity was a combination of 'nervous energy' and boredom.[43] Much of Napoleon's inner psychological processes were withheld from view, revealed only in letters to close family members. His private letters to his first wife, Josephine, reveal an unabridged infatuation:

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[39] *The Mind of Napoleon: A Selection from His Written and Spoken* Words, ed. by Christopher J. Herold (New York: Columbia University Press, 1955), p. 39. Herold refers to this quote as a 'repeated saying'.
[40] Herold, p. 40.
[41] Herold, p. 40.
[42] Herold, p. 40.
[43] See, J. Holland Rose, *The Personality of Napoleon* (London: G. Bell and Sons, 1929), p. 175. Rose refers to his activity as 'nervous activity', Falk refers to it as 'nervous energy'.

I awake full of you, your image and the intoxication of last night give my senses no rest.

Sweet, incomparable Josephine, what a strange effect you have on my heart. Are you angry? Do I see you sad? Are you worried? My soul breaks with grief, and there is no rest for your lover; but how much the more when I yield to this passion that rules me and drink a burning flame from your lips and your heart? Oh! This night has shown me that your portrait is not you!

You leave at midday; in three hours I shall see you.

Mean while, my sweet love, a thousand kisses; but do not give me any, for they set my blood on fire.[44]

As far as the motivation behind his political designs went, most of it was revealed in private letters sent to his eldest brother Joseph. He sent the following letter to Joseph while commander-in-chief of the French army in Egypt, in July 1798:

You will see in the public papers the result of our battles and the conquest of Egypt, which met enough resistance to add a page to the military glory of this army. Egypt is the richest country on earth in corn, rice, vegetables, meat. It is utterly barbarous. There is no money, not even in France. Please look after my interests. I have great private unhappiness; dear to me; to lose it and see you betray me is the one thing needed to make me a misanthrope. It is a sad

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[44] John Eldred Howard (ed.), *Letters and Documents of Napoleon: Volume I, The Rise to Power* (London: The Cresset Press, 1961), pp. 65-66.

state to be in to have all one's thoughts centred in the heart of one person.

Arrange for me to have a country house when I get back, either near Paris or in Burgundy; I intend to shut myself up there for the winter: I have had enough of human nature. I need solitude and quiet; grandeur bores me; my emotions are dried up. Glory is stale at twenty-nine; I have used everything up; it only remains to become a real egoist. I shall keep my town house; never will I give that up to anyone. I have only enough to live on. Good-bye my one friend. I have never wronged you. You owe me that at least, whatever my heart may have desired: you understand? Kiss your wife, and Jerome.[45]

The letter revealed the private interests of Napoleon. It showed the real aims behind his coup d'état of 1799. The official justification given in his memoirs was:

When lamentable weakness and endless versatility are manifested in the councils of a government; when an administration, yielding by turns to the influence of every opposing party, and going on from day to day without any fixed plan or determined system, has shown its utter insufficiency; and when the most modern citizens in the state are obliged to confess that it is without a government: when rulers, insignificant at home, have shamefully brought on their country the contempt of foreigners – the greatest of injuries in the eyes of a proud people; a vague uneasiness spreads throughout society: agitated by

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[45] Howard, pp. 258-59.

the instinct of self-preservation, it looks into its own resources, and

seeks for someone able to save it from destruction.[46]

The letter to his brother Joseph paints a different picture. Of course,

Napoleon had seen enough of the endless disruptive machinations of the

revolution, the same as many Frenchmen had by 1799, so there was a

grain of truth in his memoirs. In fact, there was evidence that he believed in

the convictions in his memoirs at the time of 18 Brumaire.[47] With the aid of

Consuls Roger Ducos and Abbe Sieyes, he wrote a proclamation to the

French Nation on 12 November 1799:

> The Constitution of the Year III was dying. It was incapable of
> protecting your rights, even of protecting itself. Through repeated
> assaults it was losing beyond recall the respect of nations. Malignant
> and selfish factions were despoiling the Republic. France, indeed,
> was entering the last stage of general disorganization.
> But patriots have made themselves heard. All who could harm you
> have been cast aside. All who can serve you, all those representatives
> who have remained pure have come together under the banner of
> liberty.
> Frenchmen, the Republic, strengthened and restored to that rank in
> Europe which should never have been lost, will realize all the hopes
> of her citizens and will accomplish her glorious destiny.

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[46] *Napoleon's Memoirs*, ed. by Somerset de Chair (London: Faber and Faber, 1948),
p. 361.
[47] The date of the coup d'état in the short-lived Republican Calendar. In Gregorian
terms, it was 9 November 1799.

Swear with us the oath we have taken to be faithful to the Republic, one and indivisible, founded on equality, liberty and the representative system.[48]

One of Napoleon's self-proclaimed detractors, Madame de Stael, agreed with Napoleon that there was an absence of competent political men in France at the time Napoleon seized power.[49] The words in his memoirs, however, constituted the result of fifteen years of reflection and reinforcement into propaganda. This propaganda masked a simpler truth; that behind it all were the contradicting mechanisms of boredom and self-interest.

One element of Napoleon's behaviour that remained consistent across his political and military careers, as well as his private life, was his opportunism. His first wife, Josephine, was a widow in the twilight of her youth at 32 when he married her, and her personal finances were in a dire state, but she was tied to influential politician Barras.[50] Napoleon sensed an opportunity to fuel his ambition by taking Josephine off Barras' hands.[51] During his political career he capitalized on the turbulent state of the French government to take power in 1799. He then capitalised on the opportunity presented by positive public opinion of him to increase his

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[48] Howard, pp. 314-15.

[49] De Stael, p. 280. 'The lawyers who had been called in 1799 to the place of Directors, exhibited there only the ridiculous pretense of authority, without the talents and the virtues which render it respectable; the facility with which, in the course of an evening, a Director assumed the airs of a court, was truly singular; the part must not be one very difficult to play'. Also in Napoleon's favour was the general desire of the populace to prevent the return of Jacobinism, the political sect which had been responsible for the genocidal Terrors of the revolution.

[50] Falk, p. 130.

[51] Falk, p. 131. Barras had previously taken Josephine as his mistress, but he was ready to move on to other women. Barras and Napoleon shared an amicable relationship, reinforced from the time Napoleon married Josephine,

power in 1803 when he held a referendum to become First Consul for life.
He then drew upon popular support again in 1804 when he held a
plebiscite to gain support to become Emperor. When opportunities did not
readily present themselves, he simply engineered their creation. A part of
the reasoning behind the plebiscite to gain popular support for the
emperorship was the necessity to nullify the political coups and
assassination plots that had been attempted against him in the years
prior.[52] To reinforce the validity of this reasoning he engineered the
abduction and execution of Royalist émigré, the Duc d'Enghien, in early
1804.[53] Opportunism also formed a central part of his strategic method in
his military campaigns. In his memoirs he referred to the importance of
unity of command and then stated, 'The favourable opportunity must be
seized, for fortune is female – if you balk her today, you must not expect to
meet with her again tomorrow'.[54] Perhaps even more revealing of his
strategic approach is a quote repeated by French count, Emmanuel Las
Cases in 1816:

> Napoleon said that war consists of nothing but accidents and that a
> commander, though he must always adjust himself to general
> principles, should never overlook anything that might enable him to
> exploit these accidents. The vulgar would call this luck, in fact it is
> the characteristic of genius.[55]

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[52] Because many of the plots were engineered by Royalist supporters, who believed
in divine right, becoming an emperor would (hopefully) pacify this group of
enemies.
[53] *Napoleon on Napoleon: An Autobiography of the Emperor*, ed. by Somerset de
Chair (London: Cassell Publishers, 1994), p. 157.
[54] De Chair, p. 209.
[55] Herold, p. 222.

In the conversation with Las Cases, Napoleon was recalling part of an observation he made in the 1800s:

> Military science consists in first calculating all the possibilities accurately and then in making an almost mathematically exact allowance for accident. It is on this point that one must make no mistake; a decimal more or less may alter everything. Now, this apportioning of knowledge and accident can take place only in the head of a genius, for without it there can be no creation – and surely the greatest improvisation of the human mind is that which gives existence to the non-existent. Accident thus always remains a mystery to mediocre minds and becomes reality for superior men.[56]

In fact, most of Napoleon's life was dictated by this opportunistic creed. A corollary support function was necessity. He said in conversation during the 'Hundred Days' in 1815, 'Don't talk to me of goodness, of abstract justice, of natural law. Necessity is the highest law; public welfare is the highest justice. Unto each day the evil thereof; to each circumstance its own law; each man according to his nature.[57]

In the super games of game theory a primary method for players to extract more beneficial gains over time is the observance of patterns.[58] In a super game played thirty times, if player II selects the same strategy in the first fifteen games, and that strategy is a pure strategy, it makes sense for player

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[56] Herold, p. 221.

[57] Herold, p. 160. The 'Hundred Days' was the period dating from his return to France from exile in Elba (1 March 1815) to the dissolution of the Commission of Government after his second abdication (7 July 1815).

[58] A 'super game' is a game played more than once.

I to assume that player II will select it again the sixteenth game. Much can be learnt about a player by observing the way he plays. The Russian general, Kutuzov, observed the way Napoleon conducted war throughout the Napoleonic era and prepared the counter-strategy in the Russian Campaign of 1812 that led to Napoleon's failure. This failure led Napoleon to rethink his game theoretic approach. At Leipzig in 1813, he began developing a new method for warfare, that centred on defence rather than attack, after realising his old methods had become known and were therefore obsolete.[59] Glover inferred that this was the error of a complacent despot. However, in terms of game theory, and militarily, it represented a change in method from what had become a predictable pattern.

Two principles of game theory relevant to generals in the Napoleonic era were, first to decipher the patterns of enemy generals and, second, to avoid falling into the same patterns, thereby becoming predictable. Napoleon's career saw success on the first count, and failure on the second. This failure, however, does not consign Napoleon to the judgment of a poor game theorist, because time was an equally important factor in deciding the outcome of game theoretic military events in the era. The Allies persisted in a divided command structure for more than thirteen years, which led to poor planning and execution of campaigns, and meant the offensive strategy Napoleon applied with success in his first Italian campaign of 1796 could be applied again and again and achieve effective results.[60] Ironically, from a game theoretic perspective, the divided command structure worked

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[59] See Glover, p. 190. '...Faced with an enemy so widely dispersed General Buonaparte would have defeated them in detail by a series of lightning blows but the Emperor Napoleon wrote, "My intention is to leave the initiative to the enemy"'.
[60] His strategy centred on aggression and initiative.

in favour of the Allies as time went on. This was because different generals were employed across different campaigns, meaning that Napoleon could never decipher the patterns of Allied activity; no two generals were exactly the same in their approach to warfare.[61] Strikingly, this is also partly why his aggressive strategies worked so well for so long. By taking the initiative, he forced Allied generals to respond to his actions, thereby making Allied plans obsolete before they had a chance to be implemented in detail.

The relevance of the principles of patterns to establishing Napoleon's game theoretic utility consists in allowing these principles to form a basis for comparison when measuring relevance in regards to each of Napoleon's primary motivational drives. Napoleon's drives when summarised were: personal ambition (self-interest), narcissism, immortality, glory, opportunism and the elimination of boredom. With regards to each of his drives, a table can be constructed that looks like this:
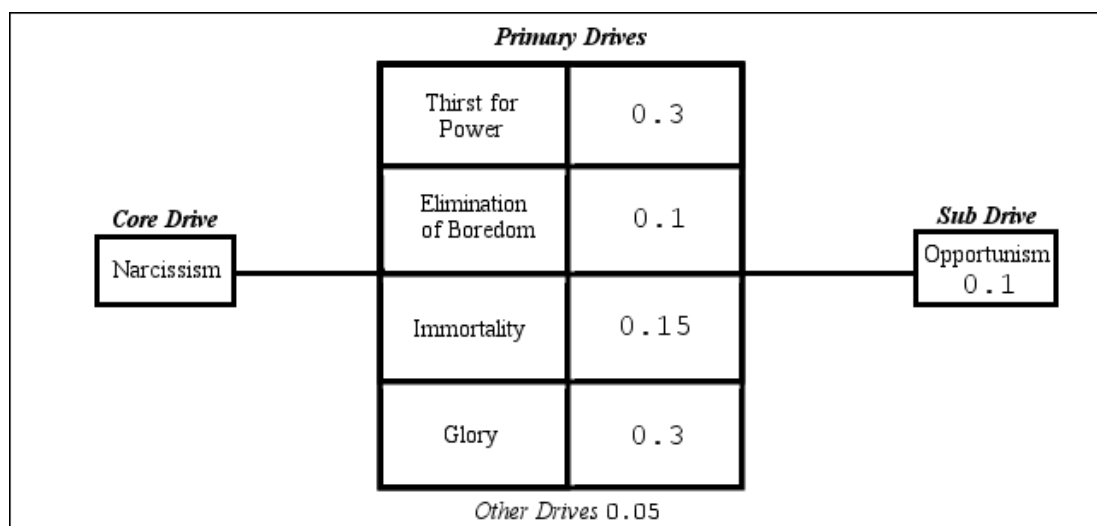
Primary Drives			
	Thirst for Power	0.3	
Core Drive	Elimination of Boredom	0.1	Sub Drive
Narcissism			Opportunism 0.1
	Immortality	0.15	
	Glory	0.3	
Other Drives 0.05			

Figure 4: Table of initial drive values for Napoleon, c. 1796.

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[61] The War of the Third Coalition is not exempt from this general observation.

The core drive, narcissism, was what 'powered' Napoleon's other drives. As mentioned, his was a 'healthy' type of narcissism that allowed reflective self-analysis. In essence he was as much aware of his flaws as he was aware of his useful abilities. The sub-drive, opportunism, when taken at face value appears to lack a general form or function. Indeed, most of the time, opportunism, in the general context of human behaviour, appears at a point where it leads to furthering a goal related to a primary motivational drive. The reason opportunism served as a sub-drive for Napoleon was because he often allowed a presented opportunity to manipulate his goals as his career progressed. The primary drives of the Emperor Napoleon of 1805 were very different from the drives of the soldier Napoleon. Falk provides evidence of the results of his perceived state of failed ambition in 1795:

> On August 12, 1795, Napoleon was so depressed that he wrote his elder brother Joseph, "…if things go on like this, my friend, some day I'll simply fail to get out of the way of a passing carriage."[62]

This is not to imply, of course, that he had no ambition, but simply that he did not have a clearly defined set of goals. This paradigm persisted throughout his career. As he admitted on St Helena in 1816,

> Besides as far as [historians'] positive assertions go, they will prove themselves cleverer than I, for I often would have found it very

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[62] Falk, p. 120.

difficult to assert with any degree of truth what was my whole and real intention'.[63]

His opportunistic method was to 'wait-and-see' what was possible, and the extent of his motivation lay in what was available to him based on the resources he had at his disposal at any given time. He wrote many letters to the French Directory from 1793-1799, and at no point in his writings did he appear hostile towards the Directory. He had a certain amount of respect for their leadership, and it is reasonable to assume that the extent of his ambitions at this time lay in obtaining a degree of military glory as a General within the French army. By 1799 he had obtained the three resources of: fame, success, and timing, all necessary to attempt a political coup. He was also aided by a decline in the operational ability of the French Directory. In November 1799, he began his operation to seize power. It was well timed, as the French public had still not heard about his defeat at Acre in the Egyptian campaign, so to their knowledge his military record was impeccable. Napoleon relied on this popularity to gain patronage within the Directory. The Director, Abbe Sieyes, realised that Napoleon and his popularity with the people was the key to improving the status of the government, and he approached Napoleon with a scheme to grant an emergency sitting of the government, overseen by the army, led by Napoleon. Sieyes's objective was to secure enough power to see his reworked constitution implemented. Napoleon, of course, had other ideas about how the situation could be turned to his advantage.[64] In every case, opportunity played a pivotal role in the direction he took.

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[63] Herold, p. 240.
[64] Namely obtaining supreme power.

Napoleon's thirst for power first appeared as a premier motivational drive. Falk attributes this to a rare mixture of ego and psychopathy.[65] Lending credence to this is the fact that he was at his most miserable when in a position of helplessness, and most satisfied when he had enough power to control the affairs of others.[66] When he occupied a position of relative, but not absolute, power, his demeanour tended towards depression. He dealt with this by spending much of his first few years as a French lieutenant on leave in Corsica.[67] It was not until he was made the Commander in Chief of the Army of Italy that his writings began to reveal a more relaxed persona. The orders of the day that he wrote while in Italy were representations of a man in control. Despite power being a primary motivational drive, Napoleon came to use power as a tool to impel his other goals. It became a means to an end instead of a source of desire. As early as 1800 he became aware of the restraints placed on him by 'absolute' power, and had realised that the 'tool' of the consulate was a flawed one in the context of his needs. He wrote to the French General Moreau:

> Today I am a kind of puppet who has lost his freedom and his happiness. Great honors are fine, but only when one imagines or remembers them. I envy your happy lot. Together with brave men, you are going to do admirable things. I would gladly trade my consular purple for the epaulets of a brigade commander under your

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[65] Falk, p. 208.

[66] He was arguably at his most powerless during an incident at the military school at Brienne where he went into a fit when made to do penance.

[67] See Rose, p. 43.

orders. I very much hope that circumstances will permit me to come

and give you some help.[68]

The letter revealed more than his realisation of the flawed nature of political power in a republican environ, it provided insight into his association with power during the early consulate. The reason he required power early on was profoundly psychological. He needed it to bring his family out of the poverty and obscurity they had been enduring since the end of 1789. In 1795, while a general, he had considered suicide when he could not meet a request from his mother to supply her with money.[69] Despite being a Brigadier General, hyperinflation had made his money worthless.[70] It was obvious that if he was going to improve his family's condition, he needed more power. Based on his history of subordinate command, it was unlikely he would have thrived under Moreau, which makes his offer in the letter to trade the consulship for a command in Moreau's army a simple platitude. The crucial point the letter highlighted in regards to Napoleon's motivations was that power was merely a tool he used to help him meet his own ends. A high military rank meant wealth, but when hyperinflation destroyed his wealth, he decided that resolving the issue of hyperinflation by obtaining more power would yield faster and more effective results than remaining a semi-obscure, but well paid, general and waiting for the problem of economic chaos to resolve itself. Later in his career the 'parasitic' nature of his relationship with power became more symbiotic; power began to feed on him. In 1804 he found out that his elder brother Joseph had ambition to

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[68] Falk, p. 209.
[69] Falk, p. 119.
[70] Falk, p. 118.

become heir apparent to the throne. He gave his thoughts on Joseph's objective to the French politician, Roederer:

> Nothing can wipe this from my memory. It was as if he [Joseph] had told a passionate lover that he had slept with his mistress, or at least that he had hopes of doing so … power is my mistress. I have worked too hard at her conquest to allow anyone to take her away from me or even covet her. Although you say that power came to me of its own accord, I know what it has cost me – the sufferings, the sleepless nights, the scheming. Two weeks ago, I would not have dreamed of treating him [Joseph] unjustly. Now I am unforgiving. I shall smile at him with my lips – but he has slept with my mistress.[71]

The second of Napoleon's primary drives was the elimination of boredom. Like his thirst for power, his relationship with boredom also centred on need. Despite the elimination of boredom being a primary motivational drive, his personal letters are the only place where documentary evidence exists. Reflection on this drive is absent from his memoirs. Comments on the subject are also absent from official letters and documents, which is hardly surprising given the delicate nature of so whimsical a subject in the context of war. However, despite his position of near absolute power from 1794 onwards, he was still subject to whim. During his exile on St Helena, he mentioned an incident to the scholar, Las Cases. It was an event that was fuelled by boredom, but came to serve as a moral lesson. It took place in 1794, while he commanded the artillery of the Army of Italy. The woman involved in the incident was a wife of one of the soldiers:

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[71] Herold, p. 257.

Taking her out for a walk one day in the midst of our positions near the Col di Tenda, the idea suddenly came to me to give her a sight of a little engagement; and I ordered the outposts to attack. We were victors, it is true, but obviously it could lead to no result. The attack was purely my fancy, and yet some men remained stretched out on the ground. Therefore, later on, every time that the memory of it has occurred to me, I have strongly reproached myself for it.[72]

His primary method for dealing with boredom after 1803 was to pass the time concocting plans for world conquest. The outcome of the War of the Third Coalition in 1805 was partly a result of two years of logistical and strategic planning. The historian Ida Tarbell wrote of Napoleon's interest in these subjects:

Certainly he never worked more prodigiously. The campaigns of 1805-1807 were, in spite of their rapid movement, - indeed, because of it, - terribly fatiguing for him; that they were possible at all was due mainly to the fact that they had been made on paper so many times in his study. When he was consul the only room opening from his study was filled with enormous maps of all the countries of the world. This room was presided over by a competent cartographer. Frequently these maps were brought to the study and spread upon the floor. Napoleon would get down upon them on all fours, and creep about, compass and red pencil in hand, comparing and measuring distances, and studying the configuration of the land. If

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[72] Napoleon, quoted in Rose, p. 19.

he was in doubt about anything, he referred it to his librarian, who was expected to give him the fullest details.[73]

Boredom was a large part of the reason he exhibited a restless energy until the end of his days. On St Elba, during his first exile, and at the age of 45, he had an opportunity to recuperate and reflect back on his career and achievements. Instead he chose to remain on the alert for possible political disruptions in France. Rose notes that Napoleon's first hopes came to him after reading in the newspapers that 'at the banquet in the Hotel de Ville (at Paris) there were present only the wives of nobles, and no officers of the army'.[74] British officer, Sir Neil Campbell, who visited Napoleon on St Elba wrote:

> I have never seen a man in any situation of life with so much personal activity and restless perseverance. He appears to take so much pleasure in perpetual movement, and in seeing those who accompany him sink under fatigue, as has been the case on several occasions when I have accompanied him. I do not think it possible for him to sit down to study, on any pursuits of retirement, as proclaimed by him to be his intention so long as his state of health permits corporeal exercise. After being yesterday on foot in the heat of the sun, from 5 a.m. to 3 p.m., visiting the frigates and transports, and even going down to the hold among his horses, he rode on

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[73] Ida Tarbell, *A Life of Napoleon Bonaparte: With a Sketch of Josephine, Empress of the French* (U.S.A., McClure, Phillips & Company, 1901), <http://history-world.org/napoleon13.htm>, Accessed 26 May 2013, chapter XIII.
[74] Rose, p. 258.

horseback for three hours, as he told me afterwards, pour se

défatiguer![75]

Rose continues, 'Yet the activity of the Emperor found expression in many ways. He planned roads, vineyards, and new buildings, also a lazaretto in the harbour of Porto Ferrajo, alleging that vessels would come there for quarantine in preference to Leghorn, and so bring money to the island'.[76] Rose mentions that Napoleon's 'febrile restlessness' has been ascribed to various causes. 'Some persons refer it to the epileptic symptoms now and again apparent in gasping breath and nervous collapse; others allege a secret and insidious malady that affected the whole organism and impaired the judgement'.[77] The one thing that is certain is that Napoleon was averse to becoming idle. Of all the images of him, none shows him more relaxed than the one painted by Horace Vernet in exile on St Helena.

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[75] Sir Neil Campbell, quoted in Rose, pp. 262-63.
[76] Rose, p. 263.
[77] Rose, p. 187.

Figure 5: Napoleon exiled on St Helena.

In the picture he is shown sitting alone with a newspaper at his side, his right hand in his pocket. He has a relaxed posture and is wearing a sunhat. But even in this most serene of Napoleonic images he still maintains a look of quiet determination and dedicated thought. One can only wonder at what combinations and calculations were being devised inside his head at this time, for there were no major results of his meditations. Eventually, his exile on St Helena was reduced to a tripartite war between him, his ailing health, and his jailer, Sir Hudson Lowe. This mental restlessness also formed another reason for his ambition to become the First Consul. In Cairo, in 1798, he became the ruler of Egypt, and he relished the extra

burden placed on him by this new role.[78] The mixture of revolt, economic crisis, and foreign invasion became lessons in statecraft; the conditions were strikingly similar in France. By the end of 1799 he had learnt enough and returned home to set in motion his plans to become the new head of state in France.[79]

His need to eliminate boredom and idleness was exemplified in the dictation of his memoirs while in exile on St Helena, though they were created largely in the first two years of his exile (1815-17), when he still held out vague hopes of returning to Europe. The memoirs were a way to achieve the third of his drives, immortality, in a way no other method could. By maintaining the style of writing that Rose referred to as 'clear, precise, vigorous, but nearly always curt and formless', Napoleon was able to retell the events of his career from his point of view, and he was almost always able to find a justification for his actions.[80] In cases where he could not, he simply told the story as it happened and left it up to posterity to justify, a pleasing prospect from Napoleon's perspective, as most of his actions, particularly his military ones, have resulted in a positive review. Of all of Napoleon's primary drives, immortality was the one that found the fewest instances of contradiction. He was never known to have said, 'I wish that I, and my actions, be forgotten when I am gone'. The closest he came to such a statement was during the Consulship. While visiting the tomb of French

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[78] See, for instance, his letters sent to various persons, which range from the occupation of Egypt, to repressing revolt, to boredom, to his investments in France, to questions about the amount of water a camel could hold. See Howard, pp. 218-304.
[79] Rose, pp. 114-19. Also of importance are similar political lessons learnt in Italy in 1796-97.
[80] Rose, p. 190.

philosopher Jean-Jacques Rousseau, the following dialogue took place between Napoleon and his host, Stanislas Girardin:

> "It would have been better for the peace of France if this man [Rousseau] had never lived." – "And why, Citizen Consul?" – "It was he who prepared the French Revolution." – "I should have thought, Citizen Consul, that it was not for you to complain of the Revolution." – "Well," he replied, "the future will tell us whether it would not have been better if neither I nor Rousseau had ever lived."[81]

As a result, and particularly after 1809, immortality in the form of remembrance in the minds of men became more relevant to him than personal glory. In 1807, at Eylau, Napoleon received his first major military check from the Russians. He ordered a frontal assault and was repelled with catastrophic losses. This approach to warfare became a pattern for him during this period, his battles became a means to an end rather than well-coordinated examples of his military prowess. The Peninsular War of 1808-1812 served as both a reason and an example of this change in thinking, 'the Spanish Ulcer' as he came to call it, tested his patience and led him to comment on it in his memoirs:

> The error committed in Spain was not that of proceeding too rapidly, but that of proceeding too slowly after my departure. Had I remained there a few months, I would have taken Lisbon and Cadiz, united all parties, and pacified the country. My armies never lacked military

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[81] Herold, p. 67.

stores, clothing, or provisions. The Duke of Dalmatia's army in Andalusia, the Duke of Albufera's in the east, and that of the north, were very fine, of great strength, and abundantly supplied. The guerrillas were not formed until two years after, when they arose in consequence of the disorders and abuses which had crept into the whole army, except the corps of Marshal Suchet, which occupied the Kingdom of Valencia.[82]

Napoleon's frustration with the lack of progress in Spain stemmed from the fact that he viewed the conquest of Spain merely as part of a process. As he mentioned, the guerrilla-style of warfare that became a primary cause of the stalemate in 1812, did not yet exist in 1808, when he first entered Spain. His perception of the Spanish War was that it ended when he ejected the British armies from Portugal in 1809.[83] The men he left in command, the Marshal, Soult, and his brother Joseph, were tasked with 'mopping up'; establishing and maintaining order in conquered zones, and marching on the remaining enemy strongholds of Cadiz, Valencia and Lisbon.[84] The main reason Napoleon needed Spain was because Spain controlled the vast natural resources of South America. Acquisition of these resources would aid his grand designs for world conquest.

Napoleon performed many other actions that indicate to his preference for immortality over his other drives after 1809. The invasion of Russia in 1812, which Falk refers to as 'suicidal', is one.[85] The glamour of a quickly

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[82] De Chair, p. 216.
[83] De Chair, p. 216.
[84] De Chair, p. 217.
[85] Falk, p. 373.

subdued Russian Empire and easy access into Asia for more conquests was of more value to him than a well-planned and methodical invasion of the Russian heartland. Another action occurred during the night of April 12-13 1814, after his first abdication. He took the contents of a vial that contained a mixture of opium and strychnine.[86] He had been carrying the vial around his neck for the previous 18 months, but the contents, too old and weak to be effective, merely caused spasms, nausea and vomiting.[87] Another action was his return from exile on the isle of Elba, and was perhaps the most vivid example of his preference for immortality over other drives after 1809. After landing in Grenoble, legend has it that troops of Louis XIII, under Major Delessart, marched on Napoleon and his small army of 600 guards. Falk continues:

> Delassart's deputy cried, "There he is! Open fire!" but his soldiers did not obey him. There was a dead silence. Napoleon stood before his soldiers bared his chest dramatically and cried, "Soldiers of the Fifth! I am your Emperor. If there is one among you who would kill his Emperor, here I am!" Again there was silence. Then suddenly cries of "Long Live the Emperor!" rang out, as Delassart's soldiers broke ranks, fell to their knees before Napoleon, and went over to him.[88]

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[86] Falk, p. 403.

[87] Falk, p. 403.

[88] Falk, p. 413. Napoleon was more humble about the incident. In his memoirs, he recalls the event: 'On the 7th, at 2 o'clock in the afternoon, I came face to face, on the heights before Vizille, with the advance guard of the Grenoble garrison, which was marching against me. I approached it alone, harangued it, made it fly the tricolour, put myself at its head, and at 11 o'clock in the evening, entered Grenoble, having covered eighty leagues in six days across very mountainous country'. See De Chair, p. 242.

The suicidal steps Napoleon took after 1809 resemble a pattern. Essentially they represent efforts to romanticise his career. These fatalistic actions provided dramatic closure, an essential end to what was obviously his destiny, leaving it up to perceptive future authors such as Victor Hugo and Leo Tolstoy to view and record Napoleon's life in terms of what he desired the most: a fully-enclosed story that would be remembered. He knew that, as long as there were too many elements working against him for glory and conquest to constitute his most fundamental attribute, history would interpret Alexander the Great, and others, as having done it better. Romanticising the myth of 'Napoleon' was the next best way to ensure his place among the revered figures in history.
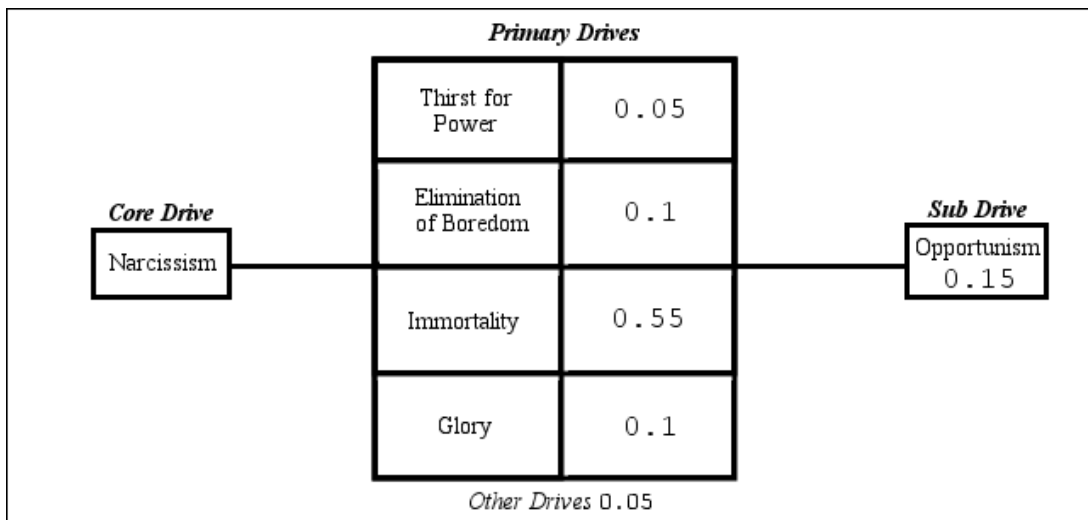

Figure 6: Napoleon's drives after 1809.

The year 1805 formed a part of the 'transitional' years of 1802-07, where his drives were in a contest for supremacy. Part of the reason for this was a degree of uncertainty about his capabilities. The scholar, Las Cases, wrote of a conversation he had with Napoleon in 1816:

…Returning to his military debut at Toulon … he said: "I was still far from considering myself a superior man." And he repeated that it was only after Lodi [1796] that he conceived the first ideas of high ambition, and that this ambition fully revealed itself only on the soil of Egypt, after the victory of the Pyramids and the capture of Cairo, etc. "Then indeed," said he, "I felt that I could abandon myself to the most brilliant dreams."[89]

He was aware by 1805 that military greatness was a realistic goal, and yet he still felt as though there was more he could accomplish. The years after the Treaty of Amiens were also the years when he was, in a military sense, in his intellectual prime. He had by this stage, been present in seven campaigns, commanded in five, had suffered reverses and defeats, and just as importantly, he had learnt how to win. In short, he had compiled a collection of experiences that would enhance his chances of victory. This collection included the strategic planning and the logistics required in the coming War of the Third Coalition of 1805.
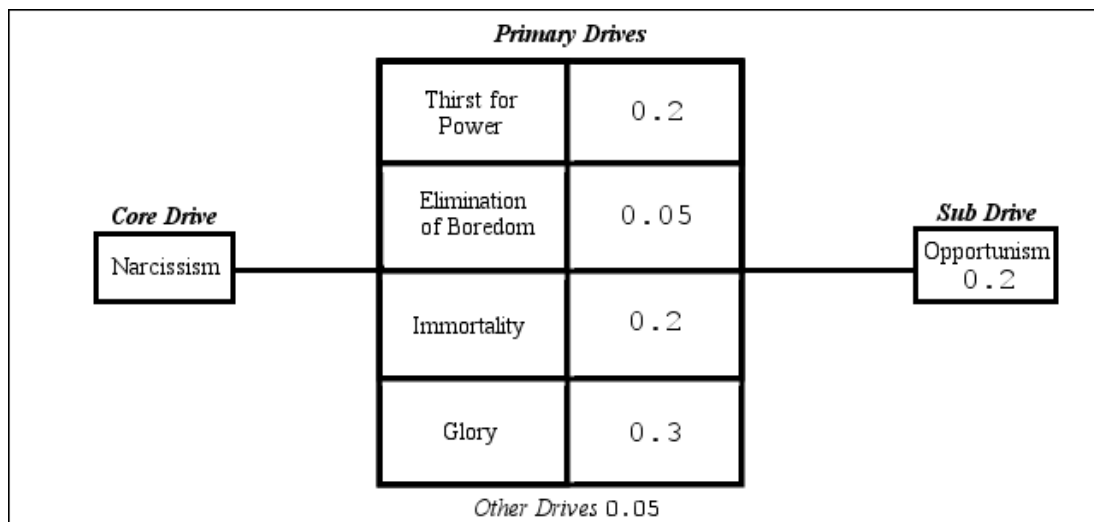
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[89] Herold, p. 47.

Figure 7: Napoleon's drives between 1803 and 1807.

Napoleon was less bored in the transitional years than he was in the years before or after. It was suppressed by the tense atmosphere created by the Treaty of Amiens. Both Britain and France knew that the Treaty was nothing more than a temporary armistice.[90] As the historian, Glover, states: 'Bonaparte saw peace as the continuation of war by other means'.[91] Only a few months after the Treaty was signed, Napoleon annexed the Isle of Elba, and the Italian duchies of Piedmont and Parma. According to Glover, Napoleon's foreign interests extended to places such as Turkey, Egypt, the Barbary States, the Ionian Isles and even as far away as Muscat.[92] The British Navy remained active in the Mediterranean, and reneged on one of its treaty promises: to relinquish control of the island of Malta. Running alongside this state of tension were Napoleon's political activities. The military historian, Chandler, summarises Napoleon's political activities in this period:

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[90] Glover, pp. 83-88.
[91] Glover, p. 83.
[92] Glover, p. 87.

As events turned out, the ending of the European struggle in 1802 was destined to afford the major protagonists only a brief breathing space before the recommencement of hostilities. Nevertheless, the First Consul utilized the pause to exploit his role as "peacemaker" so rapidly and successfully as to attain the summit of his political career. On August 2, the result of a national plebiscite was declared, and shortly afterward Bonaparte was appointed Consul for life with the overwhelming approval of the French people. From then onward he was virtually a monarch, and in a very short time the appearance was transformed into reality. On May 18, 1804, the Senate proclaimed him Emperor with the title of Napoleon I...[93]

While Napoleon's restlessness may have been founded on boredom, and while in other periods of his life, this restlessness manifested itself in the form of unnecessary political acts (the Peninsular War, for example), the period 1802-1807 was sufficiently positive as to afford Napoleon a type of activity that was, outwardly at least, validated in the forms of enhancing French glory, and spreading republican ideals.

The military glory that Napoleon sought in the War of the Third Coalition can be considered among the last of his wars where he could take the moral high-ground, and feel justified in his quest for glory. The wars in Europe after 1789 stemmed largely from a single issue: monarchism versus republicanism. In 1793 Austria declared war on France, and from that point onwards, France, from a foreign political perspective, was simply defending the principals defined by the revolution. Any negative opinion

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[93] Chandler, p. 307.

regarding the annexation of various duchies by Napoleon in 1802 was countered by the fact that England was not completely holding up its end of the treaty; in fact it could be argued that England broke more clauses in the Treaty of Amiens than France did. Napoleon's validation of the annexation of Piedmont and Parma was to ensure the spread of republican ideals, and while this was a tenuous political justification, not to mention the fact that its application could be seen as universal, there was some consent among foreign nations, in particular the newly formed Republic of Italy, and completely justified as far as many Frenchmen were concerned.

One of the reasons for France's overwhelming military success in the War of the Third Coalition was Napoleon's firm belief that he was justified in his actions both militarily and politically. This was not a belief that was undermined by chivalric codes. That he still considered noble principles in war as mere guidelines is revealed in a conversation with the unfortunate General Mack after the latter's capitulation at Ulm in 1805:

> Napoleon: How could you be so stubborn as to hold out in this miserable fortress of Ulm, which doesn't even deserve to be called a fortress? It is indefensible, and you wanted to resist my whole army. For my forces are vastly superior in numbers. Together with the Bavarian army, they amount to more than two hundred ten thousand men.
>
> Mack: I beg your Majesty's pardon. You have only one hundred forty thousand men, and that is almost twice the number I could pit against you.

Napoleon: Now let us add it up together: I have one hundred seventy battalions here, each of a thousand men, with a cavalry of more than twenty thousand men; my Guards, eight thousand; and twenty thousand Bavarians.

Mack: Your Majesty's battalions have only five or six hundred men each, and your forces cannot amount to more than one hundred forty thousand men at the most.

Napoleon: How do you know the strength of my battalions?

Mack: Precisely the same way Your Majesty knows the strength of ours: I had them counted when they passed the Rhine.

Napoleon: Well, I'll admit they have only six hundred men, which is their peacetime strength. But the others will arrive here presently, and my Army of Brest, under Marshal Augereau, will join the *Grande Armée.*

Mack: It is said that Your Majesty has troops marching through Switzerland, whose neutrality we have respected.

Napoleon: I have not recognized its neutrality; consequently, I have a right to enter its territory.

Mack: Ah! We are always the dupes of our good faith, of our credulity! It's a very sad, a very unfortunate thing! And in the same way Your Majesty has violated the neutrality of Prussia, thus gaining eight days in effecting the junction of your forces with Bernadotte's army and the Bavarian army. This premature junction gave you the opportunity to crush us—and yet, if I had wished to violate Prussian territory, I could easily have cut off the Bavarians' retreat.

Napoleon (smiling): Why didn't you do it?[94]

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[94] Herold, pp. 208-09.

And yet, despite his dubious approach to conducting war, there is consensus among Napoleonic scholars that the years 1805-07 were the moral pinnacles of his career. Because perceived bad events, such as Moscow and the Peninsular War, did not yet exist for Napoleon, the years 1805-07 can be defined more by his thirst for glory than any other of his traits.

One element of Napoleon's motivation that remained constant early on in his career, was his thirst for power. In the context of power, the years 1802-1807 were transformative. Lord Acton's famous phrase, 'power corrupts, absolute power corrupts absolutely', is most pertinent here; what began as a genuine desire to put French interests before his own during the years of the Consulship, 1799-1802, gradually gave way to his own desires for power. In 1802 he held a referendum to become First Consul for life and in 1804 he held a plebiscite to become Emperor of the French, and as a result became the ruler of the most powerful nation in Europe. Yet this was still not enough. He wanted Britain subdued militarily, and to achieve this he assembled a large army on the French coast facing England in 1802. His thirst for power eventually drove him to betray the Spanish Monarchy in 1807, abducting the heir apparent to the Spanish throne, with the aim of claiming the throne himself and incorporating Spain and Portugal into his empire. Even though the Peninsular War turned out to be a political error, it made geographic sense in light of his aims. If Napoleon could successfully subdue both Britain and Spain, he would be free to focus his military ambitions towards the east. Britain's massive empire included India, which would serve as a gateway into Asia. This goal manifested itself in Napoleon's

psyche as early as 1798 during the invasion of Egypt. The following is a statement he made in conversation during the 1800s:

> In Egypt, I found myself freed from the obstacles of an irksome civilization. I was full of dreams, and I saw the means by which I could carry out all that I had dreamed. I saw myself founding a religion, marching into Asia, riding an elephant, a turban on my head and in my hand the new Koran that I would have composed to suit my needs. In my undertakings I would have combined the experiences of the two worlds, exploiting for my own profit the theatre of all history, attacking the power of England in India, and, by means of that conquest, renewing contact with the old Europe. The time I spent in Egypt was the most beautiful of my life, for it was the most ideal.[95]

In 1805, at the beginning of the War of the Third Coalition, Napoleon had close to absolute control over the affairs of France. The three legislative assemblies that had been established at the inception of the Consulate in 1799, were reduced to the state of a mere figurative body. After proclaiming Napoleon emperor, one of the three legislative bodies, the Sénat conservateur, was no longer subject to election by popular vote, additional members were chosen by Napoleon, and existing members were made compliant with grants of large tracts of land, and generous stipends.[96]

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[95] Herold, p. 48.

[96] The historian, L. P. T. Bury, records the nature of the *Sénat conservateur* during the empire: 'As one of its most independent members [Comte Lanjuinais] wrote later, from 1804 to 1813 there was no real freedom of discussion in the Senate: "after a speech in the Emperor's name and some words by a rapporteur, almost always the same person ... reports were put to the vote without any debate. There

Napoleon further consolidated his grip on power with the use of additional aids, such as the censoring of political magazines, and the execution of the Duke of Enghein.[97]

Recent research on narcissism paints a more positive picture of the paradigm. What previously was an element of ego-centric personalities, and revealed in the form of vanity and selfishness, now appears as more of an essential function for ambitious individuals. Part of the paradigm that psychologist Ronnie Solan analyses is the myth created in the psyche that the individual is better than what he really is. Solan's research was on children, whom, he discovered, have as much need for narcissism as adults do in an adult-dominated world. The active creation of the belief in the superiority of the child provides comfort in the face of adversity, particularly when adults refuse to take children seriously. Whether the application of the paradigm in childhood manifests itself in the general populace or whether it is only a necessary device for individuals with ambition remains unclear, but Falk was onto something when he revealed the extent Napoleon's of self-interest. What drove Napoleon was the purified myth of superiority, the belief that he was better than others. Slightly contradicting himself, Napoleon admitted in his memoirs, and in conversation, that the best periods of his life were during the Consulship (1799-1804), and during the occupation of Egypt.[98] One thing both these periods have in common is that they place Napoleon in a position of near-absolute power. 'Sultan

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were a few blank cards and a few 'nays' for form's sake, but they never rose above fourteen.'' See J. P. T. Bury, 'The End of the Napoleonic Senate', *Cambridge Historical Journal* 9, 2 (1948), pp. 165-89.

[97] The historian Chandler records that the execution of the Duke of Enghien was a political method for silencing Republicans who were accusing Napoleon of plotting to restore the House of Bourbon. See Chandler, p. 309.

[98] Herold, p. 48.

Kabir' (Great King), they called him in Egypt, and during the consulship he led what was at the time the most powerful nation on earth. Another aspect of the periods that Napoleon found agreeable was the possibilities that the two positions he occupied opened up. He admitted that in Egypt he was free to abandon himself to dreams of greatness. The consulship, with its accompanying republican dream, was similar to the Egyptian experience. The fact that he was perceived by some as a manifestation of this dream (see Beethoven's Symphony No.3, for example), contributed to his contentedness during this period, and initially he worked toward a realisation of this ideal, reaching zenith in 1802 with the Treaty of Amiens. After this period, however, he began to change. The republican government was a machine designed to work for the good of others. There was little capacity for self-interest when trying to govern while adhering to the ideals of *liberte*, *egalite* and *fraternite*. Consequently, by 1802, Napoleon had tired of the lack of self-reward for his work and held a referendum to become First Consul for life. He began to cater more to his narcissistic desires than to the desires of the people. From 1803 onwards his search for glory and immortality became more important to him than the republican ideals he had worked to uphold.

The creation in the psyche of the narcissistic 'myth of superiority' was also a contributing factor to the series of reasons why Napoleon was such an excellent game theorist and strategist. In essence ambition, narcissism, and game theory were intertwining branches of the same tree; they all involved the mental creation and projection of future possibilities. The central tenet of Napoleon's narcissism was the belief that he, as an individual, was superior to perceived oppressors. In cases where this was untrue he 'filled

the voids', and found elements of his psyche that he considered better, in order to convince himself of his superiority. In cases where he could not find a convincing mechanism, the future was the only place he could 'fill the void', and express some hope that he may be able to exert his own superiority. His ambition aided the process by fusing the collective elements of his psyche together in order to bring future objectives into the present. It is these elements that explain why he excelled in game theoretic military scenarios. Game theory also involves this theoretical acquisition of the future. Game theory for the 'player', is nothing more than an analysis of the processes required to select the most logical strategy in some future decision. Napoleon, therefore, by seeking solace in the future, became as much of a creator of future possibility, as he was a sculptor of the present.

The goal of this chapter is to apply the elements of Napoleon's psyche examined in the third chapter toward a strategic analysis of the opening phase of the 1805 War of the Third Coalition. It will combine Napoleon's motivational drives with an examination of the military, geographic, and strategic factors that were important to the first decision Napoleon had to make in the war: whether he should remain on the defensive or attack, and if he should attack, in which direction he should send his main force. The outcome will be a geographic 'mind-map' that combines these elements with the benefits and drawbacks of each possible strategy to produce numerical representations of the value, or perceived 'outcome', of each strategy.

In game theory, utility can be defined as: 'the amount of risk a player is willing to take to obtain an object'. Residual noise can be defined as: elements of a person's behaviour that exist, but are insignificant enough in relation to a decision as to have no effect on the outcome. Relevance can be defined as: the level of impact a person's particular primary motivational drive has on a decision. All three of these concepts are necessary to bring utility into use in real-world historical application. John von Neumann and Oskar Morgenstern gave only simple theoretical examples of utility in *Theory of Games and Economic Behaviour*, and defined some mathematical axioms.[1] Depending on the complexity of the real-world application (in this case, the application is certain decisions made by Napoleon in the War of

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[1] John von Neumann and Oskar Morgenstern, *Theory of Games and Economic Behavior*, Commemorative edn (Princeton: Princeton University Press, 2007), Kindle ebook, l. 1554.

the Third Coalition), it is probable that more concepts will need to be introduced before enough principles have been established to make universal the application of mathematical analysis of decisions. The benefit of universal application is that it will allow decisions of similar complexity to be compared, and analysts will be better equipped to judge the merits of various decisions in light of other, similar decisions. For present purposes, utility, residual noise, and relevance, combined with knowledge of Napoleon's motivational drives will prove sufficient to perform an analysis of the War of the Third Coalition.

One of the early decisions Napoleon had to make in the War of the Third Coalition, was where to send his 'Grande Armée'. The Grande Armée was a relatively new construct, having been renamed from the 'Armee d'Angleterre' in 1805. The Armee d'Angleterre was created initially by Napoleon in preparation for the planned invasion of Britain in 1803. It consisted of seven 'corps', units of between 15,000 and 30,000 men, each of which contained its own marshal, infantry, artillery, cavalry, and auxiliary units, and each of which essentially constituted a complete army in itself.[2] This grand army was to serve in the war as Napoleon's personal instrument; it was the primary strategic element of his military plans. The Grande Armée of 1805 contained approximately 190,000 men.[3] Napoleon also had a secondary army of approximately 65,000 men under the command of Andre Massena, one of the most capable generals of the era.[4]

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[2] Ian Castle, *Austerlitz: Napoleon and the Eagles of Europe* (Yorkshire: Pen & Sword Books, 2005), Kindle ebook, l. 651.
[3] Castle, l. 651.
[4] See R. F. Delderfield, *Napoleon's Marshals* (New York: Cooper Square Press, 2002) for comparisons between the abilities of Napoleon's Marshals, including Andre Massena.

Massena's army was based in Italy and, strategically, would serve as a decoy army designed to draw off large numbers of Coalition troops from Bonaparte's planned invasion into Bavaria. A third important aspect of Napoleon's plan was the army of French Marshal Bernadotte's I Corps, situated in Hanover as an army of occupation. When Napoleon learnt of the Allied plans he instructed Bernadotte to 'evacuate Hanover, except for a garrison left at the town of Hameln, and march for Göttingen, 130 miles to the northeast of Mainz'.[5] This army, with its north-south line of march, provided Napoleon with the needed flexibility for his plan to surround the Austrian forces situated in Bavaria. The options available to Napoleon of where to send his *Grande Armée* and thus where to conduct the main thrust of his operations were either: to Italy to occupy the south and gain the mountain pass into the Austrian Tyrol, or; to the Swiss Confederation to give himself the option of launching attacks into Austria via Southern Bavaria or the Western Tyrol, or; to the Black Forest to launch a direct attack on Allied forces occupying Bavaria, or; into Bavaria via a northern route in order to cut off the Austrian forces in Bavaria from the Russian forces under General Kutuzov who were advancing into Austria from Russia.

Included in the list of possible strategies Napoleon could have employed on the eve of the War of the Third Coalition was the decision to fortify France and fight a defensive war. Even though this strategy has been little talked about in history books, it was a viable strategy for a number of reasons. First, France had an incredibly high number of well-constructed fortresses, both along its borders and further into French territory.

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[5] Castle, l. 846.

Figure 8: The fortress town of Neuf Brisach, as it exists today. It was a fortress on the French border with what is now Germany. It was one of over 300 fortresses modified by the engineer Vauban in the early eighteenth century.[6]

Although there were far fewer French fortresses that had the geographical perfection of the fortress of Mantua in the Italian Campaigns of 1797-98, an effective defensive strategy was that considered by Napoleon in the French Campaign of 1814. He could have allowed fortresses to become besieged while maintaining operational armies in the field nearby. The fortresses would force the invading armies to detach men to besiege each fortress, while the French field armies would attack key locations. Constant repetition of this tactic would eventually wear down the invading allied

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[6] Taken from *Wikimedia,* <http://upload.wikimedia.org/wikipedia/commons/0/0d/Neuf-Brisach_007_850.jpg> [accessed 12 May 2013].

armies. Once this occurred, Napoleon could either switch to the offensive with a series of lightning strikes, or continue the war of attrition until the Allies agreed to come to terms. This strategy was similar to that considered by Napoleon before to the start of the Waterloo Campaign. In his memoirs, he reflected on the Waterloo Campaign. He stated:

> ...The first plan was to remain on the defensive, letting the allies take upon themselves the odium of aggression, attacking our fortresses, penetrating as far as Paris and Lyons, and to begin around these two bases a lively and decisive war. This project had plenty of advantages.
>
> First, the allies, not being able to start a campaign before 15 July, would not arrive before Paris and Lyons before 15 August. The 1st, 2nd, 3rd, 4th, 5th, and 6th Corps, the four corps of heavy cavalry, and the Guard were concentrating about Paris. These corps had, on 15 June, 140,000 men under arms. By 15 August they would have had 240,000. The 1st Reconnaissance, or 'Jura', Corps, and the 7th Corps would concentrate on Lyons. They, on 15 June 25,000 men under arms and would have, by 15 August, 60,000.
>
> Secondly, the fortifications would be completed and perfected by 15 August.
>
> Thirdly, by this period there would have been time to complete the organisation and arming of the forces destined for the defence of Paris and Lyons, to reduce the Paris National Guard to 8,000 men, and to quadruple the sharpshooters of this capital, bringing them up to 60,000 men. These battalions of sharpshooters having officers of the line would give valuable service; and they, joined with 6,000

gunners of the line, of the navy, of the National Guard and to 40,000 men from the depots of seventy infantry regiments from the non-uniformed guard belonging to the corps of the Paris army, would bring up to 116,000 men the force designed to guard the entrenched encampment of Paris. At Lyons, the garrison would be comprised of 4,000 National Guards, 12,000 sharpshooters, 2,000 gunners, and 7,000 men from the depots of the eveven infantry regiments of the army based at Lyons—total, 25,000 men.

Fourthly, the enemy armies, which would penetrate to Paris by the north and east, would be obliged to leave 150,000 men before the forty-two fortresses of these two frontiers. Putting the strength of the enemy armies at 600,000 men, they would be reduced to 450,000 men by the time of their arrival in front of Paris. The allied armies which would penetrate to Lyons would be obliged to watch the ten strong-points of the frontier of the Jura and the Alps. Reckoning them at 150,000 men, they would scarcely be 100,000 strong on arriving before Lyons.

Fifthly, on the other hand, the national crisis having reached its peak would produce great activity in Normandy, Brittany, Auvergne, Berry, etc. Numerous battalions would be arriving every day at Paris. The process would be one of continuous increase on the French side and of diminution on the allies' side.

Sixthly, 240,000 men under my command, manoeuvring on the two banks of the Seine and the Marne, protected by the vast entrenched camp of Paris, guarded by 116,000 immobile troops, would emerge victorious in an encounter with 450,000 of the enemy. Sixty thousand men, commanded by Marshal Suchet, manoeuvring on the

two banks of the Rhone and the Saone, under the protection of Lyons, guarded by 25,000 immobile men would overcome the enemy army. The sacred cause of the country would triumph![7]

The possible Waterloo strategy[8] was an improvement of the strategy used in the French campaign of 1814, where, despite only having 30,000 men under his direct command—versus the projected 220,000 in 1815—he managed to secure a string of victories that only ceased when his marshals refused to fight on. There was no direct mention of a similar strategy Napoleon considered for use in the 1805 campaign, but the same fortresses existed at that time, and the army was even better equipped, experienced and unified than it was in either 1814 or 1815, meaning that it was an entirely viable strategy in 1805. A second benefit of a defensive strategy was that Napoleon could call upon the French to aid their armies during the campaign. The uniting French revolutionary fervour had subsided by 1805, but the public were still generally positive toward the Napoleonic regime. Finally, the defensive strategy was viable from both a time and a geographic perspective; it would allow the French plenty of time to set up their defensive operations, and each army could arrive at its assigned location and prepare long before the Allies were ready to invade.

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[7] *Napoleon's Memoirs*, ed. by Somerset de Chair (London: Faber and Faber, 1948), pp. 496-97.
[8] Note that had Napoleon decided upon this course of action, it would not have come to be called the 'Waterloo Campaign', but something else, given that Waterloo was in Belgium. In order to facilitate recognition, campaigns in the Napoleonic era were often named by historians after their most memorable battles. 'The Austerlitz Campaign', 'Marengo', or the 'Waterloo Campaign' are a few examples. In the absence of such a memorable battle in the campaign that would have resulted from Napoleon's discarded 1815 defensive strategy, the campaign would likely have become known simply as 'The French Campaign of 1815'.

Despite the viability of a defensive strategy, there were a few reasons it was not used in 1805. The first was that Napoleon had an excellent foreign intelligence network in operation. This meant that an offensive strategy could be conducted with close to perfect information. On the other hand, Napoleon kept a tight rein on the press and on the exchange of military information in France, and as a result, the Allies had an inferior intelligence network operating inside French borders. Any offensive strategy Napoleon employed would essentially be, at least in its early stages, a game theoretic scenario where he had close to 'perfect' information, and his allies did not.[9] Based on the information obtained from his foreign intelligence network, Napoleon knew of the 3-pronged strategy the Allies intended to employ, he had a fair idea of enemy numbers in each location, and, most importantly, he had a good idea of the time frame required for the Allies to implement their plan. The geographic distance between armies that the Allied strategy called for meant that, if his armies moved fast enough, he could isolate enemy armies and defeat them before other Allied armies had time to come to their aid, and end Napoleon's numerical superiority. Another reason that a defensive strategy was not used resided in the form of Napoleon's *Grande Armée*. This army, made up of seven Corps, contained many soldiers from Napoleon's previous campaigns, had many experienced generals and marshals, and had been training together on the coast of the English Channel for the previous two years. It would have been a waste to remain on the defensive with an army that was a refined military weapon. Finally, the foraging method of supplying an army with food and resources that had

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[9] A comparative analogy, drawn from chess, is that Napoleon could see all the pieces on the board, while the Allies could only see theirs and a few of Napoleons. Note: as mentioned in chapter II, perfect information is a game theoretic term meaning that 'a player can see all of the opposing players possible strategies'.

been introduced into the French military system by the 'organiser of victory', Lazare Carnot, in 1794, was also better suited to invasion than to defence. By 1805, French soldiers were well adapted to this method.[10]

Figure 9: The Strategic Plans of the Third Coalition. The primary objectives of each of the three Allied attacks were, from north to south, Hanover, Bavaria, and the Kingdom of Italy. After these objectives were achieved the second phase would begin, which was an invasion of France from these three locations.[11]

Another possible strategy was to send the *Grande Armée* north into Hanover in an effort to defeat the British, Swedish and Russian forces that were set to invade that country by sea. The Allied forces planned for the invasion were smaller than the Allied forces in the other theatres. Britain

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[10] Incidentally, a last minute attempt by the Austrian Field Marshal, Karl Mack, to switch from the supply train method to emulating the French foraging method played a part in his army's undoing in the 1805 Ulm Campaign.
[11] Taken from Castle, l. 804.

was sending a force of around 10,000 men to join up with 16,000 Russians and 12,000 Swedish soldiers for a total of 38,000. This army, when combined, would be operating against the 190,000 men of the *Grande Armée*, meaning that they would likely make very little headway as long as the *Grande Armée* remained in Hanover. As Napoleon accurately assessed, the strategy was redundant for a few reasons. First, the timing of the occupation of Hanover had to be perfect. If the French occupied the country too soon, the Allied armies would likely defer landing, thereby leaving Napoleon with 190,000 men doing nothing in Hanover. If Napoleon occupied it too late, the Allied forces would be able to capture key fortresses and delay the *Grande Armée* in Hanover long enough for the Austro-Russian forces to cross the Rhine into France. This situation compounds the second problem which was that even a successful operation in the north would likely give the Russian and Austrian armies time to link, and the central location of the Bavarian theatre would allow them the opportunity to go where the greatest strategic gains lay. Lastly, if Prussia became belligerent, Kutuzov and the forces of Russian generals, Bennigsen and Buxhowden, could march through Prussia, junction with Prussian armies and invade Hanover with the same number of soldiers as the French. Apart from the fact that no one would expect it, there was very little that favoured an attack into Hanover.

The Allied commanders, Archduke Charles, Archduke John, and Field Marshal Mack, all came to the conclusion that Napoleon would send his *Grande Armée* through Italy and into Austria from the south. Consequently, at the outset of the campaign, the southern Austrian army under Charles contained 90,000 men that would attack into Northern Italy by way of the

Austrian Tyrol. Charles' efforts would be augmented by another British 'penny packet'[12], a Russian army of up to 25,000 men, and a Neapolitan army of 38,000 men who would attack from Naples into northern Italy.[13] There were a number of reasons the Allied commanders concluded that Italy would be the main theatre of operations. First, it was the theatre Napoleon had the most experience in, having defeated the Austrians there in the campaigns of 1797-98, and again in the Marengo Campaign in 1800. He knew the terrain, and he knew which fortresses were the most important. Northern Italy became a French kingdom in 1805, this change in government was largely a result of Napoleon's military and political efforts there, and this meant he could count on the support of the government and much of the population. It also was not clear to the Allies at this point whether Napoleon knew their intentions; if he did not he would possibly have seen the war more as an opportunity to take control of Venetia, than as a war to destroy the Third Coalition. This was a dangerous prospect from the perspective of the Austrians as, geographically, Venetia split southern Austria in two. Lastly, apart from the Swiss Republic, Italy was the most direct route into Austria.[14] If Napoleon had adopted this strategy, he would likely have left a small army of observation on the Rhine, joined his *Grande Armée* with Massena's, and invaded into either Venetia or the Tyrol with an army of around 300,000 soldiers.

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[12] A penny packet was a small British expeditionary force that constituted the main form of material British contribution in the early years of the Napoleonic era. Later, in the Peninsular War, and in the War of the Fifth Coalition in 1809, the British made more substantial material contributions in the form of large land armies.
[13] Castle, location, 790.
[14] The Helvetian Republic was essentially what is now known as the Swiss Confederation.

Despite the Allied commanders' belief that Napoleon would attack through northern Italy, there are obvious reasons why he did not. First, it meant he would have had to either subdue belligerent southern Italy first, or risk being attacked on two fronts when he tried to move into Austria. Subduing Italy would have been the safer of those two options, but that would take time, and this would allow the Allies time to junction and set up a response. Second, the Austrian armies in Bavaria would be free to operate against France's frontier. The army that had occupied Bavaria contained about 70,000 men who would soon be augmented by the 46,000 under Kutuzov, coming from Russia. A total of 116,000 soldiers would be too much of a threat to ignore, especially considering that a successful penetration of France's border would place the Allies much closer to Paris than Napoleon, situated in Italy, would have liked. Third, if things went badly in Hanover, or if Prussia entered the war on the side of the Allies, then, Napoleon would again be badly placed for dealing with this issue, and he needed Hanover as a bargaining chip in efforts to maintain Prussia's neutrality. The Italian theatre was also close to the sea, which meant that the formidable British navy could play a role in the theatre. Lastly, of the three possible strategic theatres, the Italian theatre was the furthest away from where the *Grande Armée* was placed in north-western France. This meant that the chances of his intentions being deciphered by enemy spies while marching to the Italian theatre would be increased. In any case, by the time the *Grande Armée* arrived in northern Italy, the Allies would have had enough time to join and prepare a response.

GERMANY and ITALY in 1803 after the Principal Decree of the Imperial Deputation (Reichsdeputationshauptschluss). Territorial combinations dissolved before 1803 are indicated by hair line type. The smaller divisions of Germany are left uncolored. For examples of the detailed process of mediatization effected by the Principal Decree of the Imperial Deputation, see pages 142, 143. D.-Duchy; E.-Electorate; E.A.-Territory of the Electoral Archchancellor; K.-Kingdom; N.O.-Nassau-Orange; Pr.-To Prussia; Rep.-Republic; S.-To Salzburg. ★-Fortress. □-Imperial Cities. Scale 1:9000000

A fourth possible strategy was to attack into Bavaria. This is the strategy Napoleon eventually chose, and there were many merits to the selected strategy. First, it would swing the Bavarians in his favour. The Prince-Elector of Bavaria at the time, Maximilian I, was loyal to Napoleon, but a growing sense of German nationalism within Bavaria meant that if Austria could get there first and cement relations, the Bavarian army would likely join Austria against France. If Napoleon could get there before the Bavarians agreed to join with Austria, he would be able to unite with Bavaria and incorporate the 30,000 man Bavarian army into his own army. Second, Bavaria's central location meant the British Navy would play only a marginal role in the war. Bavaria was also close to the coast of the British Channel, where the main French army was located, which meant that the *Grande Armée* could be in the theatre within four weeks of the start of the campaign.[16] Napoleon also had an asset in Andre Massena, because he was as capable of independent command as Napoleon was, and he was already in Italy; an attack into Bavaria as opposed to Italy would not forfeit this valuable asset. An attack into Bavaria would also leave no enemies at Napoleon's back, as an attack into either Italy or Hanover would, and this would leave him free to focus on operations in the Bavarian theatre. Lastly, and perhaps most important, if Napoleon was fast enough, an attack into Bavaria would allow him to defeat the Austrians there before the Russians had time to join them. This strategy would deal a military blow to the Austrians, as well as hurt Allied morale, and with Bavaria under his

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[15] *Map of Germany and Italy*, <http://www.zonu.com/fullsize-en/2009-09-18-8814/Map-of-Italy-and-Germany-1803.html> [accessed 7 March 2013]
[16] Castle, l. 1120-1186.

control, would place him very close to the Austrian capital of Vienna. The only drawback to attacking into Bavaria is that it was obvious from a French perspective. It was the most direct route to Vienna from the northern French coast, where the *Grande Armée* was situated.

Because he selected the Bavarian strategy, Napoleon's utility in the form of his primary drives can be compared. Chief among his primary drives at this stage was his quest for glory. Provided the Allies had based their plans on the simplest possible likely outcomes, Bavaria would theoretically be more difficult to gain early victories in than either Hanover or Italy.[17] This is because if the Allies had sent the bulk of their forces there, it would have been possible to contain Napoleon in that theatre. Consequently, it would, provided Napoleon could win, lead to more glory, particularly if he could follow up his conquest of Bavaria with further victories against Kutuzov's Russian army in Austria. Napoleon considered the capture of capital cities a primary objective of campaigns, and the defeat of Kutuzov's army would leave the way open to Vienna. The glory of a Bavarian strategy would lie in the speed with which it would allow him to penetrate to Vienna, and the corresponding irrelevance such a penetration would place on the Hanoverian and Italian theatres. Napoleon's core drive, narcissism, also called for a significant level of control over military events, and the central location of the Bavarian theatre would provide the greatest degree of control.

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[17] Without taking into account Napoleon's history of success in Italy, Bavaria was the closest theatre to Vienna, close to the coast of the British channel, and central, making it, geographically, the best theatre for the French.

That control was a fundamental feature of his psyche can be established by a number of his past actions. First, in 1793, at the Siege of Toulon, while a major in the artillery, he petitioned the French Government a number of times for a change in leadership of the French army besieging Toulon. It was not until he found a leader who agreed with his plans, and he therefore was able to exert much control over the situation, that he reached a state of contentment. In the Italian Campaign of 1797, the French Government attempted to divide the leadership between Napoleon and another French General, Kellermann. Napoleon vehemently refused this attempt at forced submission, stating that he would resign his command if the government persisted in their designs. A part of the reason for this was the fact that he felt, with some justification, and as the Allies proved many times in the following years, that a divided command was a hindrance in military affairs in the Napoleonic Era, but an additional explanation for his reaction to the government's suggestion, is that it would no longer allow him complete control over the military situation in Italy. It was here that his drives intertwined; his narcissistic nature demanded sole control, sole control meant that the glory of a victory would be exclusively his own. The Bavarian strategy was essentially a chain reaction of glory leading to greater glory; provided he managed to separate the first army he faced in that theatre from the others, he would always outnumber opposing armies.

The final possible strategy was a two-pronged attack into the Tyrol, with Massena attacking from Italy in the south, and Napoleon and his *Grande Armée* from the Swiss Confederation in the north. This strategy had a few merits. First, it would be more suited to the French supply method of 'living off the land' than a single combined attack through Italy would. Second, it

would increase the likelihood of Massena's army penetrating the barrier of the Alps, as the presence of Napoleon's army in the western Tyrol would force the Austrians to detach a large force to contain Napoleon. Third, if both Massena and Napoleon could penetrate into the Tyrol, the independent abilities of these commanders could have an increased effect on operational outcomes. They would likely have adapted Napoleon's method of always ensuring elements of their armies were within a day's march from each other, meaning there would always be reinforcements available during hostilities. A Swiss strategy would also mean that there were two lines of communication and supply open with France.

The main drawback of the Swiss strategy came in geographic form: the Swiss Confederation was narrow at its eastern tip, so there would be a more limited range of possible directions of assault into Austria. Napoleon compared this to Bavaria, which was bordered by Austria on the east and south, so there were multiple possible lines of attack. This meant that once Napoleon began his eastward movements, it would be more difficult for the Allies to respond. This is because they could not be sure where Napoleon would launch his attack. In a Swiss strategy, the Inn River's path along the northern Tyrolese border meant that Napoleon would have to attack into the southern Tyrol. This would make the strategy obvious and therefore easy for the Austrians to counter.

The collection of benefits and drawbacks can be combined with Napoleon's motivational drives in order to establish which strategy was the best one to select in the circumstances. From Napoleon's point of view, the northern theatre 'Hanover' strategy had the benefit of likely success because of the

overwhelming numerical superiority of the French if Napoleon moved the *Grande Armée* there. The drawbacks were, first, that a move into Hanover would require perfect timing, second, that it would eventually give the Allies the strategic initiative in Bavaria, and third, that the position would become untenable in the event of a belligerent Prussia. Combining and converting these benefits and drawbacks into numerical form produces a negative outcome, which, in the context of war, should either be avoided, or resolved upon only in the absence of a 'better' number. Similar conversions can be done for the other strategic options available to produce a geographical mind map of the value he placed on each strategy.
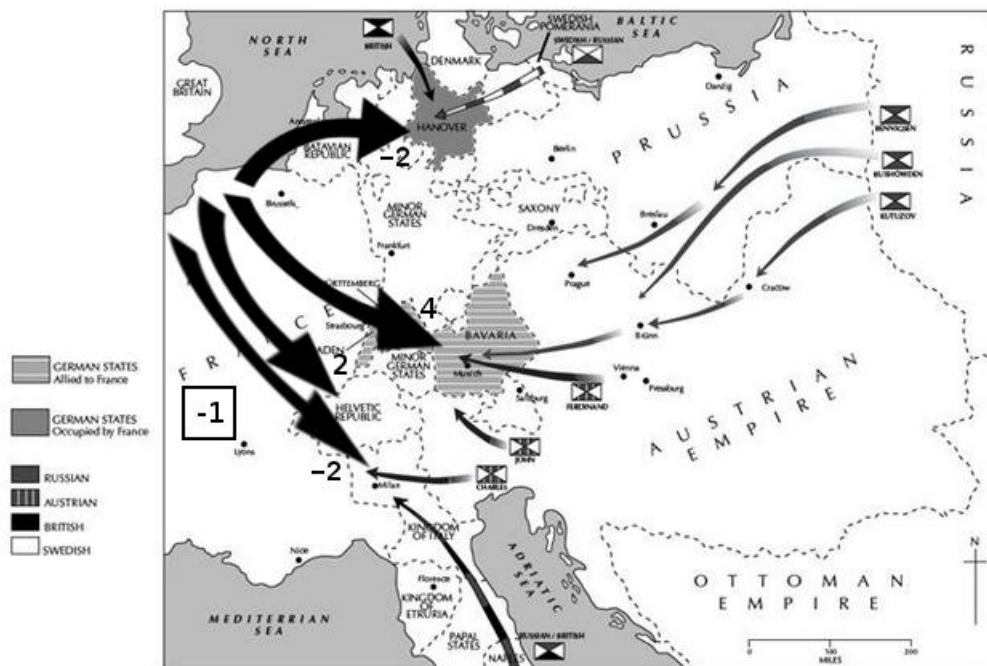

Figure 11: Napoleon's possible opening strategies and their game theoretic values in the 1805 War of the Third Coalition.[18]

The mind map uses a simple equation: benefits minus drawbacks of each strategy. Both the Italian and Hanoverian strategies had values of -2,

[18] Taken from Castle, l. 804.

making these the worst possible strategies for Napoleon to choose in the circumstances. The primary drawback was the reduced amount of control that would result from the selection of either of these strategies. By moving the *Grande Armée* to the flanks, he was exposing France to attack from Bavaria, and possibly also the other flank, pending Allied successes. The result would be an inability to arrive in time to prevent the Allied armies from doing critical damage in France. A defensive strategy had merits; chief among these was the ability to utilize the large number of fortresses, particularly the ones improved upon by Vauban in the early eighteenth century. However, the combined elements of the loss of the initiative and the underutilisation of a highly prepared army undermine the benefits, leading to a defensive strategy value of -1. The Swiss strategy was the first of the positive possible strategies, with a value of 2. If Napoleon had attacked through the Swiss Confederation he would have been able to operate effectively against the Allies with Massena. He would also have been able to exert a reasonable degree of control over the war, particularly in the southern and central theatres. The primary drawback, however, was the reduced amount of flexibility in tactical movement, particularly in the early stages, when the geographically small area of the Tyrol was the primary theatre of operations. The larger geographic area of Bavaria meant that, if Napoleon's personality is not taken into account, Bavaria was still strategically the best option with a value of 3. When his mental attributes, such as the need for control and the quest for glory, are taken into account, the Bavarian strategy becomes even more viable.[19] Without taking into

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[19] Note that a need for control is not necessarily a bad quality in a commander. The improved intelligence networks, required planning, and need to take into account all variables can often lead to positive outcomes. For these reasons, the need for

account the thought processes of the Allied war planners, it became the most logical strategy for Napoleon to adopt. Ironically, from a game theoretic perspective, the Allies' failure to realise the viability of the Bavarian strategy cannot be attributed to a failure to take into account the strategies of the opposing 'player'. This is because they had debated the strategy Napoleon would adopt, and concluded that he would choose the Italian strategy. They were drawing on past experiences; Napoleon had won three campaigns in the Italian theatre, and the northern Italian provinces were aligned politically with Napoleon, meaning he could count on a reasonable degree of support.

Napoleon's opening strategy in the War of the Third Coalition was selected with precision. This was partially owed to the fact he had been studying maps of Europe and preparing his armies for two years. When he came to the conclusion that Bavaria might be the most viable option, he sent out Murat, Bertrand, and Savary to conduct detailed spy operations in the theatre. Murat alone covered 600 miles in three weeks.[20] The result was a confirmation of the viability of the strategy. Napoleon's diplomacy also played a role. He occupied Hanover after the Convention of Artlenburg in 1803. Also in 1803, he treated Bavaria favourably in the Treaty of Luneville, giving them large amounts of territory. Because of his successes in Italy, Napoleon had since gained political control over the affairs of the Kingdom of Italy. Further north, Napoleon capitalised on the ailing finances and government of the Helvetian Republic by calling dignitaries from the Republic to Paris to resolve the issues. He implemented the Act of

control was as much an element of military logic as it was an element of Napoleon's personality.
[20] Castle, l. 860.

Mediation, which partially restored the sovereignty of the cantons and addressed many of the issues that had torn the Republic apart. The result was a Swiss Confederation that viewed France favourably in 1805. This combination of diplomacy and military preparation set the stage for a positive outcome in the campaign of 1805. Because of this preparation, all that was left was for Napoleon to confirm that his selected strategy was the best one in the circumstances and then manage its execution.

Chapter V: Conclusion

One of the aims of this study has been to examine the relevance of game theory to strategic military analysis. Despite the efforts of scholar O. G. Haywood and others to establish it as a premier method for examining military doctrine, game theory has remained almost exclusively in the domain of economics for the last 60 years. In the subject of mathematics, a field from which game theory draws most of its representative method, it occupies a space in the dusty cupboard of mathematical curiosities. This can largely be explained by the relative infancy of the subject. Because the scope of game theory covers the realms of both mathematics and the humanities, and because the subject has such a wide range of potential applications, it may be a long time before the subject attains a satisfactory degree of opacity for it to be used as a serious form of analysis. By way of comparison, physics was first established by Thales in the seventh century B.C. but remained a branch of philosophy until the late nineteenth century, a time span of 2500 years. However, despite its infancy, game theory already has value in the study of military strategy. It makes clear the importance of taking into account an opposing 'player's' (general's) strategies. A lack of awareness of the enemy's possible strategies precludes the possibility of accurately predicting the most likely strategy from the perspective of the opponent. Along similar lines, it establishes the difference between perfect and non-perfect information, and makes clear the importance of the former in forming strategies that best correspond to the circumstances. This study highlights the relevance of extraneous variables such as military codes, government interference, and morality in a military

setting, and therefore establishes war as a two-person non-zero-sum game. It also establishes mathematics as a viable form of strategic representation, as the binary nature of the decision-making process aids the mathematical format.

Another aim has been to establish the value of game theory for use in a historic context. Analytic history, which is the narrative method employed in this essay, is interesting because it produces a contradicting phenomenon. The need to access information which is otherwise lost to time adds a layer of complexity to understanding events, while at the same time the singular narrative style employed by most historians increases understanding of events. The complexity comes from needing to analyse events in their totality, while utilising these singular narratives. This phenomenon can be dealt with in two ways. First, as many primary sources as are available need to be employed, and second, as many sources in total need to be employed in the construction of analytic narratives. The difficulty of constructing these narratives varies across historical events, but generally increases the further back in time the studied event lies. This is because, in general, there is less information available, more sources have been lost or destroyed, and because cultural specifics alter the way history has been written and interpreted in different eras.[1] There are, however, historic cases where analytical interpretation—and this includes game theory—meet the criteria for analysis. The Napoleonic era is one of these cases. The overwhelming number of primary documents, essays, and

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[1] A primary example being the ancient Greeks and Romans, who viewed history as a form of entertainment, rather than as a potential form of analytic scholarship. The result is that personal bias, creative writing styles and other factors exist throughout Greek and Roman historical sources.

books that have been published on either the Napoleonic era, or certain aspects of it, provide enough perspective to make the era viable for the application of game theory to decision-making events. After this time, and particularly into the twentieth century, the analytic historical study becomes more viable, particularly as declassified documents become more widely available. An increase in empirical practices also plays a role. A lack of personal bias in primary source creation and history writing increases the viability of analytical application. Lastly, technology plays a part. Television, computers, and mobile phones make it possible to get the perspectives of non-historians on events, and these technologies also increase the number of potential primary sources.

Also aiding the viability of Napoleonic era analytic history writing is the sheer volume of literature written on Napoleon himself. His memoirs, released in 1823, added to the number of interpretations. Just as valuable, the various biographies written by people who knew Napoleon, such as Madame de Stael and Emmanuel Las Cases, have aided in evaporating Napoleonic myths, of a kind that invariably spring up around monumental figures in history. Napoleon's Correspondence, which spans twenty volumes, contains over 24,000 despatches and provides insight into the thought processes of Napoleon as events were occurring. Napoleon himself was also particularly analytic, as authors such as David Chandler and Ian Castle have assessed, and this quality makes him valuable for study in a game theoretic context. As shown in chapter three, Napoleon had a high degree of ambition, and that ambition fused the collective elements of his psyche together to bring future objectives into the present. Similar to this, game theory is the mathematical representation of the thought processes

required to select the most logical strategy in some future decision. In terms of game theory, then, Napoleon was as much of a creator of future possibility, as he was a sculptor of the present.

Chapter three also looked at what Napoleon's motivational drives were, in order to establish his utility for application in game theoretic analyses. At the core of his drives lay narcissism. As mentioned, this was not the traditional form of narcissism that centred on vanity and selfishness (though these elements were present), but a form of narcissism that enabled him to believe he was capable of more than his circumstances predicted. His narcissistic nature powered his primary drives, which were: a thirst for power, elimination of boredom, immortality, and glory. The study found that his drives were transitional, changing in value as factors such as environment, temperament, and available resources, increased or diminished in their effect on his decision-making. These drives sometimes had very little relevance. An example of this lies in the period 1803-07, when there was enough occurring, and enough possibility, to make his elimination-of-boredom drive little more than residual. Interestingly, despite being a basic human need, sexual intimacy appears never to have been more than a residual drive. Possible contributing factors to this phenomenon were the social distance from his mother, and the harsh intimate treatment he received at the hands of his first wife, Josephine. His need for remembrance in the minds of men, or immortality, was always high on his list of motivational drives, and increased in value as his career progressed. The importance of romanticising his myth culminated in his suicidal solo approach to the soldiers of the garrison at Grenoble after landing on the coast of France in 1815. His exile on St Helena at the

conclusion of his career presented an opportunity to rest, recuperate, and slip into old age quietly. Instead he chose to dictate his memoirs, constructed over a number of years. A note found at his bedside after his death in 1821 said:

> A new Prometheus, I am nailed to a rock to be gnawed by a vulture. Yes, I have stolen the fire of Heaven and made a gift of it to France. The fire has returned to its source, and I am here! The love of glory is like the bridge that Satan built across Chaos to pass from Hell to Paradise: glory links the past with the future across a bottomless abyss. Nothing to my son, except my name.

This note was representative of his efforts to enhance his myth toward the end of his life. His thirst for power diminished in proportion to the amount of power he acquired. The more power he acquired, therefore, the less relevance the drive had. By 1809, when the first hints appeared that his objectives might no longer be attainable, it was no more than residual. At this point, guaranteeing his career was remembered became more important than ensuring his achievements would be, and immortality surpassed his thirst for power in importance. The reason opportunism served as a sub-drive for Napoleon was because he often allowed a presented opportunity to manipulate his goals as his career progressed. From a military perspective, opportunism gained greater importance; it concealed his true aims, and allowed him to remain flexible in the field. In the political sphere, the combination of opportunism and timing was the primary reason his coup d'état in 1799 was successful. Sieyes and other politicians needed popular support to bring about a change in government;

Napoleon, with his fame built on an impeccable military record, arrived right as this need reached its zenith.

Chapter four applied the elements of Napoleon's psyche that were examined in chapter three toward an analysis of Napoleon's possible opening strategies in the 1805 War of the Third Coalition. The examination determined that Napoleon's opening strategy was selected with precision. Apart from the Bavarian strategy that Napoleon eventually adopted, the only other strategy that had merit was the Swiss strategy. The Bavarian strategy had all the benefits of the Swiss strategy with the additional advantage that it was closer to the French coast where the *Grande Armée* was located, meaning the French army could get there faster than they could get to the Swiss Confederation. Bavaria's central location would also allow Napoleon to exert a greater degree of control over the campaign, which was a strategic benefit as well as a psychological one. He accurately assessed the strategic irrelevance of the Allied flanking operations in Italy and Hanover. As long as he could keep winning in the central theatre, the Allies would be forced to keep withdrawing troops from the northern and southern theatres to face the threat to Austria in the central theatre. A defensive strategy also had merit, but would have meant the underutilisation of a trained and prepared army, as well as a waste of the unification brought about as a result of Napoleon's autocratic style of leadership. It would also allow the Allies time to combine and invade France.

Another goal of this study was to further the work of analyst Philippe Mongin by examining the viability of using game theory to analyse decisions

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in a Napoleonic context. The mathematics used in the analysis were kept simple. Despite this, the results obtained have been positive. There is enough material written about the Napoleonic era, and on Napoleon in particular, to establish the utility and other criteria necessary for a game theoretic analysis of decision making in non-zero-sum games in the era. Mathematics holds potential as a viable method of representing thought processes in historical scenarios. To further the mathematical analysis used in this essay, elements of the field of geometry could be used in efforts to ascertain Napoleon's thought processes in relation to time and space. Once the Allied thought processes have been established, elements of probability could be used to ascertain which strategies would have been best to employ in light of their chances of success. In statistics, tools such as regression could be used to make predictions of the probabilities of success of possible strategies prior to the examination of the decisions' outcomes, thereby eliminating the effect of psychological concepts such as hindsight bias.

Despite the study's positive appraisal of applying game theory in a Napoleonic context, there are a few limitations. First, it is unlikely that historians, or the wider public, will accept that decisions can be completely explained by numbers placed in a few categories. This is because historians like to emphasize the importance of chance, the unexpected, and irrational conduct. The use of game theory also involves the necessity of studying possibilities not defined by 'actual' history. This is because decisions always have at least two strategies to select from and only one is ever adopted. The adopted strategy is consigned to 'actual' history, while the others are eliminated from 'reality'. Unless the eliminated strategies are written down,

they only ever exist in the decision maker's mind, and only for a limited time. However, it is not possible to analyse a decision without a calculation of the payoffs for each strategy, and this includes the 'eliminated' strategies. In the absence of documentation, the paradigm brings the theory dangerously close to the realm of pseudo-history. The only consolation is that eliminated decisions are only one step removed from 'what actually happened'. Another limitation is that it is not possible to analyse each strategy without a complete description of the benefits and drawbacks to each strategy. In cases where these descriptions have been lost, only incomplete games can ever be analysed. Lastly, consideration also has to be given to the value a player places on a particular strategy's payoffs (utility), which makes it necessary to gain an understanding of the player's mind. This makes the study of psychology important. Because most game-theory games involve more than one player, knowledge of anthropology is also valuable. This combination of requirements makes it difficult to apply game theory to the study of history, and also makes it essential to compile as complete a list as possible of texts and documents associated with the 'player' in question, and the decision being studied. Game theory in its current stage of development can aid understanding, but it cannot capture everything.

In assessing the way that Napoleon's motivational drives affected his decision making, the study also found that he selected the most logical strategy in relation to his inner psychological processes, and in relation to the overall strategic situation of the opening phase of the 1805 War of the Third Coalition. It also found that he selected the most rational strategy in relation to his opponents' moves. His desire to obtain perfect information

led to the creation and use of a multi-layered intelligence network, one that resulted in access to a very high degree of information. His restriction on the sharing of military information among military personnel, and in the French press, meant that the Allies did not have access to the same level of information that he did. His decision making was therefore more informed than that of his opponents. It also prevented the Allies from seeing that, from Napoleon's perspective, the Bavarian strategy had the greatest benefits.

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