Agile Methodology and War Strategies

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Abstract[1]

The history of humankind offers lots of remarkable ideas and innovations in strategy and tactics. There is no area where people have shown more inventiveness than defending themselves or attacking and conquering others. On the other hand, the Agile methodology emerged from software development, where it tried to provide support for the successful organization of delivery projects, that have to fight and conquer the complexity. This article evidences similarities between the Agile methodology and attacking and war strategies, making extended references to one of the most renowned military treaties: Sun Tzu's The Art of War. Making inter-disciplinary analogies, comparing and contrasting the concepts from different disciplines are at the core of this article.

We'll investigate what things as initial estimations, attack by stratagem, tactical dispositions, energy, weak points, and strong points, maneuvering, variation in tactics, the army on the march, terrain, arriving on unknown ground, concrete situations on the ground, the use of spies, or what the attack by fire may mean in software development. We'll analyze how these war strategy concepts transpose to Agile concepts like adding business value, getting to the business goals, managing complexity, conducting the work the incremental and non-incremental way.

Keywords: Agile methodology, strategy, tactics, Sun Tzu, The Art of War.

1. Introduction

Agile methodology is a group of software development methods in which requirements and solutions evolve through collaboration between self-organizing, cross-functional teams. It promotes adaptive planning, evolutionary development, early delivery, continuous improvement, and encourages rapid and flexible response to change. The contemporary rise of software development led to its concepts being adopted by other disciplines,

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where its principles and philosophy may lead to success.

This article is based on my theoretical and practical experience and my readings both in the Agile and in the military field. The connection between war strategies and software development was previously made in works such as (Kovaliov, 2013), (Tudose, 2014), (Tudose, 2021). This article will try to deepen the analysis of this connection from an inter-disciplinary perspective.

The Agile Manifesto (The Manifesto for Agile Software Development, 2001), first laid out the underlying concepts of Agile development and introduced the Agile term.

It is widely discussed that war strategy principles have inter-disciplinary applications and can be used wherever foresight, organization, coordination, and tactics are needed. A good example is software development, but business and management apply as well.

The Art of War (republished 1994) is an ancient Chinese military treaty traditionally attributed to Sun Tzu, a high-ranking military general, strategist, and philosopher. Written about 2500 years ago, it has greatly influenced Eastern and Western military thinking since its first translation in Europe, in the 18th century.

The treaty opens with the following:

Sun Tzu said: The art of war is of vital importance to the State.
It is a matter of life and death, a road either to safety or to ruin. Hence it is a subject of inquiry which can on no account be neglected.

In our times, software is of vital importance for our organizations and their customers. Building better and faster software will offer a serious advantage over the competition and will open the road to success. The enemy to be defeated is the complexity and the business problems, hidden in various forms. Fighting the software development complexity can be made through war strategy principles, or through their adaptation, as this paper will investigate.

Let's review some important ideas reflected in Sun Tzu's work, so we can compare and contrast attacking and war methodologies and software development methodologies.

2. Initial Estimations

The treaty provides this introduction about the initial estimations:
The art of war, then, is governed by five constant factors, to be taken into account in one's deliberations, when seeking to determine the conditions obtaining in the field.

These are: (1) The Moral Law; (2) Heaven; (3) Earth; (4) The Commander; (5) Method and discipline.

The Moral Law causes the people to be in complete accord with their ruler, so that they will follow him regardless of their lives, undismayed by any danger.

The goal of a project's initial planning is to estimate roughly what will be delivered by the release deadline (presuming the deadline is fixed) or to choose a rough delivery date for a given set of features (if the scope is fixed). In war, one must have some initial planning about the next actions to be made, about strategy and tactics to be adopted.

The harmony inside the team, its dedication to work, and the interaction between the team members are very important in obtaining the results. However, I will not agree with a complete accord to the ruler in the sense of obedience – and neither does the Agile methodology because creative activities such as software development, business, or management also require personal initiative – but focus on the common goals of the team.

Table 1: Inter-disciplinary compared concepts

Sun Tzu's Art of War	Software development
The Moral Law	Relationships inside the team
Heaven	Environmental conditions, market conditions, competition
Earth	Technology, tools, business logic
The Commander	Project Management
Method and discipline	Software development methodology

Making the first steps to the military field and software development, let's compare a few introductory ideas.

Table 2: Initial Estimations in Art of War, analogies to Agile

Sun Tzu's Art of War quotes	Agile analogy
Heaven signifies night and day, cold and heat, times and seasons.	The environment, the market conditions, and competition. The exogenous conditions have a great weight, and they are outside the control of the team.
Earth comprises distances, great and small; danger and security; open ground and narrow passes; the chances of life and death.	The technology used, the tools, and the business logic. Arriving on an unknown ground in software development technology and business logic may require some time and effort to be mastered by the team members. After choosing a technology and opening its hood, there still may be unknown things to be revealed.
The Commander stands for the virtues of wisdom, sincerely, benevolence, courage and strictness.	In Agile, individual initiative is more important. However, I consider that the influence of coordinating people and the personal example is overwhelming in software

	development as well.
These five heads should be familiar to every general: he who knows them will be victorious; he who knows them not will fail.	Knowledge is power. We will mostly rely on the knowledge from our discipline, but we may also adopt inter-disciplinary knowledge.
According as circumstances are favorable, one should modify one's plans.	Analyze, estimate, prioritize and re-prioritize, and be prepared to respond to change.
Many calculations lead to victory and few calculations to defeat.	The purpose of the analysis is to understand what will be built, why it should be built, how much it will likely cost to build (estimation), and in what order it should be built (prioritization).

Note that, in Lionel Giles' translation of *The Art of War* that was used as a reference for this article, the title of this chapter was *Laying Plans*. To get closer to the Agile concepts, I used the one from Ralph D. Sawyer's translation (Tzu, 1994), the one of *Initial Estimations.*

The next paragraphs will move through the chapters from *The Art of War* and will summarize, compare and contrast the fundamental concepts from military strategy and Agile methodology.

3. Waging War

The Agile methodology emphasizes the idea of working in short iterations called sprints and demonstrating results at the end of each sprint.

Table 3: Waging War in Art of War, analogies to Agile

Sun Tzu's Art of War quotes	Agile analogy
When you engage in actual fighting, if victory is long in coming, then men's weapons will grow dull and their ardor will be damped. If you lay siege to a town, you will exhaust your strength.	There is little benefit from long-time projects that delay showing their results.
There is no instance of a country having benefited from prolonged warfare.	Showing incremental results after short periods will strengthen the confidence of customers and will keep the involvement of the developers high.
In war, then, let your great object be victory, not lengthy campaigns.	The project focus should be on adding business value and getting to the business goals and not on spending a lot of time working.

4. Attack by Stratagem

In the Agile methodology, the product owner decides how to prioritize the backlog content. The product owner is commonly a lead user of the system or someone from marketing, product management, or anyone with a solid understanding of users, the marketplace, the competition, and future trends for the domain or type of system being developed. One of the roles of the Agile product owner is to prioritize the product backlog. Being able to decide about possibly delaying the implementation of some risky or lengthy features, adopting the other discipline's principle, may increase the success probability of the project.

Table 4: Attack by Stratagem in Art of War, analogies to Agile

Sun Tzu's Art of War quotes	Agile analogy
Hence to fight and conquer in all your battles is not supreme excellence; supreme excellence consists in breaking the enemy's resistance without fighting.	An experienced manager should know when a project has a great risk of failure and avoid involvement. It is practically impossible to take every project and be successful. Great art consists of being able to discern and concentrate upon successful projects.
The rule is, not to besiege walled cities if it can possibly be avoided.	There may be complex features that may be compared to the walls of a city. These ones should be carefully analyzed and prioritized by the product owner.
The general, unable to control his irritation, will launch his men to the assault like swarming ants, with the result that one-third of his men are slain, while the town still remains untaken. Such are the disastrous effects of a siege.	Wasting the forces and concentration of the developers on complex features will not necessarily mean that these ones will be brought to a successful end.

5. Tactical Dispositions

In Agile, once that analysis, planning, estimations, and grooming sessions are accurately done, the team can take the offensive action from the war discipline – translated as implementing features.

Table 5: Tactical Dispositions in Art of War, analogies to Agile

Sun Tzu's Art of War quotes	Agile analogy
The good fighters of old first put themselves beyond the possibility of defeat, and then waited for an opportunity of defeating the enemy.	The defensive tactics imply analysis, planning, estimations, and grooming sessions.
Security against defeat implies defensive tactics; ability to defeat the enemy means taking the offensive.	The team meets regularly to "groom the product backlog", in a formal or informal meeting.
Hence the skillful fighter puts himself into a position which makes defeat impossible, and does not miss the moment for defeating the enemy.	Grooming can lead to: removing no longer relevant user stories; creating new user stories in response to newly discovered needs; re-assessing the priority of stories; assigning estimates to stories that have yet to receive one; correcting estimates in light of newly discovered information; splitting user stories of high priority, but too coarse-grained to fit in an upcoming iteration.

6. Energy

In Agile, the best organization and control instruments are the dashboard and the burndown chart. Dashboards show project data, support investigation, and help teams perform common tasks more quickly. A burndown chart is a graphical representation of work left to do versus time. Also, teams will hold a daily brief meeting called scrum during which each member will explain what he or she did during the previous day, what will do the next day, and if there are any blocking issues in the work.

Table 6: Energy in Art of War, analogies to Agile

Sun Tzu's Art of War quotes	Agile analogy
The control of a large force is the same principle as the control of a few men: it is merely a question of dividing up their numbers.	The best organization and control instruments are the dashboard and the burndown chart.
Fighting with a large army under your command is nowise different from fighting with a small one: it is merely a question of instituting signs and signals.	For small teams, the daily scrum will help the organization. For larger teams, there is the scrum of scrums that allows clusters of teams to discuss their work, focusing especially on areas of overlap and integration (Larman & Vodde, 2008).
The clever combatant looks to the effect of combined energy, and does not require too much from individuals. Hence his ability to pick out the right men and utilize combined energy.	In an Agile self-organized team, the team decides how best to allocate its resources to take advantage of each team member's various strengths. Each team member applies his expertise to the problems. The synergy that results improves the entire team's overall efficiency and effectiveness (Larman & Vodde, 2010).

7. Weak Points and Strong

As previously mentioned, Agile emphasizes the need to work in small iterations and to demonstrate the results after each iteration. This is essential for being able to get quick feedback, to keep the stakeholders involved and confident, and to be able to respond to change.

Table 7: Weak Points and Strong in Art of War, analogies to Agile

Sun Tzu's Art of War quotes	Agile analogy
Whoever is first in the field and awaits the coming of the enemy, will be fresh for the fight; whoever is second in the field and has to hasten to battle will arrive exhausted.	The first one that launches a product is in advantage – Agile supports getting incremental results after short periods and launching the product on the market.
He who can modify his tactics in relation to his opponent and thereby succeed in winning may be called a heaven-born captain.	Carefully plan and estimate; be aware of the team velocity and be prepared for flexible change.
So in war, the way is to avoid what is strong and to strike at what is weak.	Probably the most famous quotation from *The Art of War,* with a lot of inter-disciplinary usages. Translated in Agile as trying to work the incremental way and obtain success little by little, piece by piece. Trying to make big steps at once (so, facing what is strong) is risky and should be generally avoided.

8. Maneuvering

In software projects, there is a team manager that is invested by the business manager with the goal to obtain results. The separation between the technical and the business area and the principle of no intrusion is of great importance for a project's success.

Table 8: Maneuvering in Art of War, analogies to Agile

Sun Tzu's Art of War quotes	Agile analogy
In war, the general receives his commands from the sovereign.	The team manager receives the investment from the business manager.
Having collected an army and concentrated his forces, he must blend and harmonize the different elements thereof before pitching his camp.	The business manager should not intrude into the team's activity. The team manager and the team itself should be held responsible for the results.
Thus, if you order your men to roll up their buff-coats, and make forced marches without halting day or night, covering double the usual distance at a stretch, doing a hundred LI in order to wrest an advantage, the leaders of all your three divisions will fall into the hands of the enemy.	Working in iterations is one road to success. A great effort will be exhausting and may generate severe consequences. Operating in small iterations will bring continuous value to the business.
Let your rapidity be that of the wind, your compactness that of the forest.	The fourth principle of the Agile Manifesto is to value responding to change over following a plan (The Manifesto for Agile Software Development, 2001). The principle doesn't devalue planning—just sticking to the plan.
Ponder and deliberate before you make a move.	Carefully analyze, estimate and plan, prioritize and re-prioritize and be prepared to respond to change. Make retrospectives.
On the field of battle, the spoken word does not carry far enough: hence the institution of gongs and drums. Nor can ordinary objects be seen clearly enough: hence the institution of banners and flags.	The spoken word may not have enough impact. A dashboard is a better visual instrument of communication, together with the burndown chart.

9. Variation in Tactics

In software development, a team manager must make decisions under various conditions and pressures coming from different directions. How to get a balance between them is rather an art than a science.

Table 9: Variation in Tactics in Art of War, analogies to Agile

Sun Tzu's Art of War quotes	Agile analogy
There are roads which must not be followed, armies which must be not attacked, towns which must not be besieged, positions which must not be contested, commands of the sovereign which must not be obeyed.	An experienced team manager should feel which choice to make, what is possible to be done within some conditions, and what it is not possible, and eventually which orders not to obey.

10. The Army on the March

As previously mentioned, in Agile, on each day of a sprint, the team holds a daily meeting called the "daily scrum". Meetings are typically held in the same location and at the same time each day. Ideally, a daily scrum meeting is held in the morning, as it helps set the context for the coming day's work. These scrum meetings, which may be also adopted by other disciplines, are strictly time-boxed to 15 minutes. This keeps the discussion brisk but relevant.

Table 10: The Army on the March in Art of War, analogies to Agile

Sun Tzu's Art of War quotes	Agile analogy
If those who are sent to draw water begin by drinking themselves, the army is suffering from thirst.	The developers' commitment to project success is essential. Once one's own interest comes above the interest of the team, once the trust between the team manager and the developers is shaken, the project success may be greatly affected in any discipline.
Therefore soldiers must be treated in the first instance with humanity, but kept under control by means of iron discipline. This is a certain road to victory.	From the beginning of the project, the developers should get more and more involved and committed to success, but they should also respect discipline. The Agile methodology offers, as control instruments, the daily scrum, the dashboard, and the burndown chart.

11. Terrain

To be useful for the end-user and to add business value, a new feature needs to fulfill the "acceptance criteria". An Agile user story is a tool used to provide the description of such a feature from a user's perspective. Microsoft Press defines "acceptance criteria" as "Conditions that a software product must satisfy to be accepted by a user, customer or other stakeholder." Google defines them as "Pre-established standards or requirements a product or project must meet."

Good acceptance criteria will help get the Agile project from "It works as coded" to "It works as intended."

Table 11: Terrain in Art of War, analogies to Agile

Sun Tzu's Art of War quotes	Agile analogy
When the general is weak and without authority; when his orders are not clear and distinct; when there are no fixed duties assigned to officers and men […], the result is utter disorganization.	Clear acceptance criteria should accompany a user story. If these ones can be interpreted in many ways or, worse, if they are not complete or are even missing, the implementation of the user story is in danger of failing.
If fighting is sure to result in victory, then you must fight, even though the ruler forbids it; if fighting will not result in victory, then you must not fight even at the ruler's bidding.	Whenever you can add business value to the project, do it, no matter which the orders of the business manager are.

12. The Attack by Fire

In Agile, Minimal Marketable Feature (MMF) is the smallest piece of functionality that can be delivered and that has value to both the organization delivering it and the people using it. If there is no value in some action, the development team should not do it.

Table 12: Attack by Fire in Art of War, analogies to Agile

Sun Tzu's Art of War quotes	Agile analogy
Move not unless you see an advantage; use not your troops unless there is something to be gained; fight not unless the position is critical.	If there is no MMF in doing some work, you should not waste your resources on it.

13. The Use of Spies

In software, the spies may be the architects, consultants, and business analysts that bring new information to the developers. The information is continuously changing, and it is essential to remain up to date with the advancements in technology.

Table 13: Use of Spies in Art of War, analogies to Agile

Sun Tzu's Art of War quotes	Agile analogy
Knowledge of the enemy's dispositions can only be obtained from other men.	Offering precise information about technologies and tools to be used, their strong points and shortcomings, and business logic is of crucial importance to the project's success.
They cannot be properly managed without benevolence and straightforwardness.	Their activity should be more liberal and less tied to patterns.
Spies are a most important element in water, because on them depends an army's ability to move.	The results of their work will allow the developers to implement good technical solutions.

14. Conducting the War the Incremental and the Non-Incremental Way

There is probably no better-known Agile concept than the one of working in small increments. Even if I strongly believe there is no absolute truth to be promoted by any theory, methodology, or doctrine, I consider that this concept has shown many times its viability. Let's look at the disciplines in the opposite way than in the ones above: from the software methodology perspective to the real war.

At the beginning of 1812, the French Empire was at its greatest extent. It is uncertain if Napoleon knew anything about Sun Tzu. Regarding the Agile methodology, it is sure he knew nothing about them – there were still almost two centuries until "The Agile Manifesto" was to be published. However, his politics followed the incremental way for a long time. He

conquered new territories one by one or made satellites from different states, striking the weak points and getting outstanding achievements. We may easily emphasize here the analogy with the Agile incremental way of working.

At this time, Napoleon decided to punish Russia and decided to invade it. Despite some initial success, the Russian campaign turned into a disaster. The frontal attack over such a strong opponent proved to be fatal. Three years later, the French Empire was dissolved and Napoleon was forced to exile.

It is worth reflecting, from the inter-disciplinary point of view, on the consequences of following and not following the incremental way and risking attacking a very strong opponent.

15. Conclusions

For thousands of years, humankind has built ideas and strategies in an attempt to get power, money, and dominance over others. Through politics, economics, or war, the final goal was to achieve power. Well-established concepts and strategies that showed their appliance in a particular field were also adopted by other disciplines, to achieve success as well. Things haven't changed so far, they have just received different forms – software development (from which the Agile methodology originates) and launching on the market is one of them.

The paper has tried to highlight inter-disciplinary similarities between ancient war activities and the modern activity of software development. I have referenced – but did not remain exclusively tied to – the most famous war strategy treaty (Sun Tzu's *The Art of War*) and the Agile methodology. I have discussed where they overlap and where they seem to be different, where the concepts easily move between the disciplines, and where they need some changes. This article is giving modern and inter-disciplinary meanings to some of the quotations from the ancient military Chinese book. I strongly believe that no theory or doctrine (including the ones discussed inside this paper) should be taken as absolute truth. Things must be regarded

in context, and a good decision does not necessarily mean to follow a given principle. A good decision would mean, in many cases, a mixture of knowledge, experience, intuition, and, of course, luck.

Besides Agile, there are other methodologies originating from software development to be explored in detail (the traditional waterfall, the kanban, or an Agile-waterfall hybrid method being some of the main candidates). And, besides the classic, concise and open to interpretation Sun Tzu's *The Art of War*, there are other important military theory books to be analyzed. In April 2013, while on a walk along the Seine, I have expressly acquired the well-known military book of Carl von Clausewitz, *On War* (in French translation, *De la guerre*). As its size is about 10 times larger than *The Art of War,* it may offer a lot of analysis and interpretation.

And, besides software development and war strategies, the principles and concepts that were analyzed in this paper may be examined in a trans-disciplinary way, investigating how to use them for facilitating communication across many disciplines. This will be the topic of a future article.

War continues to be a main concern today and it remains one of the most durable activities in history. Looking back at the ideas of 2500 years ago, it is surprising how close they are to the present ones. I just hope that their application will be driven towards more peaceful domains – like software development, business conducting or management are. As the national Romanian poet Mihai Eminescu states in his *Glossă*, *Toate-s vechi şi nouă toate* (All is old and all is new).

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