

Software Methodologies and War Strategies

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Abstract²

Innovation is permanent in all fields of human activity. Strategy and tactics adopted by one discipline may be used to communicate through disciplines or may be transposed and adapted in other fields. The contemporary activity of software development brought to emerging different methodologies that exercise their influence to other fields and may be applied in other disciplines. On the other hand, as people showed the highest inventiveness in attacking and conquering others, the basic military notions are used across disciplines. Adapting the attacking and war strategies to different fields resulted naturally.

The article will examine the trans-disciplinary communication through the Agile incremental methodology and similarities between its application in software development and adopting it in different fields. We'll analyze how to transpose to other fields Agile concepts as adding business value and getting to the business goals, conducting the work the incremental and non-incremental way, and how the basic concepts from Agile are used beyond their original creation, through other disciplines.

The article also analyzes war strategies and the possibility to apply them to other disciplines, with extended references to one of the most renowned military treaties, Sun Tzu's The Art of War. 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 the attack by fire may mean to communicate across disciplines.

Keywords: Agile methodology, strategy, tactics, Sun Tzu, The Art of War, adapting strategies, trans-disciplinary communication.

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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 to communicate across disciplines, where its principles and philosophy may be transposed or may lead to success.

This article is based on the author's theoretical and practical experience, his readings in the Agile and the military field, and his professional experience in his own fields. 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 use the concepts specific to software development and the military field to express in an understandable and accepted way the things to be done and the decisions to be applied in a different field, thus facilitating trans-disciplinary communication.

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 software development and war strategy principles have applications for trans-disciplinary communication and can be used wherever foresight, organization, coordination, and tactics are needed - we may include here business management.

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, the 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.

Successful business management implies negotiating contracts, supervising operations, supporting employees reaching their top-level, and converting their skills into productivity.

Let's review some important ideas reflected in Sun Tzu's work, so we can compare and contrast attacking and war methodologies, software development methodologies, and optimally use them to communicate how to run business management.

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 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.

Running a business also implies developing plans for the projects, analyzing the deadlines and the possible features to be implemented, adopting the corresponding strategy and tactics for obtaining success.

Table 1: Heaven in Art of War, analogies to Agile, translating the concepts to communicate in business management

Sun Tzu's Art of War quotes	Heaven signifies night and day, cold and heat, times and seasons.
Agile analogy	The environment, the technologies, the competition.
Business management	The environment where the business is run, the internal and external conditions, the competition, the state of the market.

Table 2: Circumstances in Art of War, analogies to Agile, translating the concepts to communicate in business management

Sun Tzu's Art of War quotes	According as circumstances are favorable, one should modify one's plans.
Agile analogy	Analyze, estimate, prioritize and re-prioritize, and be prepared to respond to change.
Business management	The business is dynamic, one should be able to adapt the way the business is run as the surrounding conditions change and the market evolves.

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*, will summarize, compare and contrast the fundamental concepts from military strategy and Agile methodology and use them to communicate across disciplines, to business management.

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, translating the concepts to communicate in business management

Sun Tzu's Art of War quotes	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.
Agile analogy	There is little benefit from long-time projects that delay showing their results.
Business management	Successful business management means that you get the profit not a long time after the investment.
Sun Tzu's Art of War quotes	There is no instance of a country having benefited from prolonged warfare.
Agile analogy	Showing incremental results after short periods will strengthen the confidence of customers and will keep the involvement of the developers high.
Business management	Gradually growing the business will keep the stakeholders involved, will motivate the employees, and will strengthen the confidence in the way the business is managed.

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, translating the concepts to communicate in business management

Sun Tzu's Art of War quotes	Hence to fight and conquer in all your battles is not supreme excellence; supreme excellence consists in breaking the enemy's resistance without fighting.
Agile analogy	It is practically impossible to take every project and be successful. Great art consists of being able to discern and concentrate upon successful projects.
Business management	An experienced manager should know when a business has a great risk of failure and avoid it.
Sun Tzu's Art of War quotes	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.
Agile analogy	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.
Business management	Wasting the financial and human resources on long and doubtful projects may negatively impact the business. The manager should be able to calmly make decisions without involving personal feelings or nervousness.

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, translating the concepts to communicate in business management

Sun Tzu's Art of War quotes	The good fighters of old first put themselves beyond the possibility of defeat, and then waited for an opportunity of defeating the enemy.
Agile analogy	The defensive tactics imply analysis, planning, estimations, and grooming sessions.
Business management	Run the business defensively. First, secure it, then make plans about how to extend it.

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, translating the concepts to communicate in business management

Sun Tzu's Art of War quotes	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.
Agile analogy	The best organization and control instruments are the dashboard and the burndown chart.
Business management	Use dashboards, graphics, and other visual communication instruments to support management and decisions.
Sun Tzu's Art of War quotes	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.
Agile analogy	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).
Business management	The business team organization is hierarchical, regular meetings at some level are translated into aggregated meetings at an upper level.
Sun Tzu's Art of War quotes	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.
Agile analogy	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).
Business management	The human resources, their organization, and the interaction between them are essential for business success. The right people in the right place and working with the right colleagues will improve the overall efficiency and effectiveness.

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, translating the concepts to communicate in business management

Sun Tzu's Art of War quotes	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.
Agile analogy	The first one that launches a product has a serious advantage.
Business management	It is an essential advantage over the competition

	to be the first one to provide a product on the market.
Sun Tzu's Art of War quotes	So in war, the way is to avoid what is strong and to strike at what is weak.
Agile analogy	Work the incremental way and obtain success little by little, piece by piece.
Business management	Probably the most famous quotation from <i>The Art of War</i> , largely used for trans-disciplinary communication. Manage your business to benefit from the opportunities on the market and avoid risky investments.

8. Maneuvering

In software projects, there is a team manager that is invested by the business manager 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, translating the concepts to communicate in business management

Sun Tzu's Art of War quotes	Let your rapidity be that of the wind, your compactness that of the forest.
Agile analogy	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.
Business management	Make plans for developing your business, but do

	not remain stuck to them if the environment conditions change or if you find new opportunities on the market.
Sun Tzu's Art of War quotes	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.
Agile analogy	A dashboard is a better visual instrument of communication, together with the burndown chart.
Business management	The spoken word may not have enough impact. Use visual instruments to manage your business and to communicate with the stakeholders.

9. Variation in Tactics

In software development and in business, a 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, translating the concepts to communicate in business management

Sun Tzu's Art of War quotes	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.
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Agile analogy	Not all projects may be successful, so you should know which ones to get involved in.
Business management	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 which opportunities to follow to grow the business.

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, translating the concepts to communicate in business management

Sun Tzu's Art of War quotes	If those who are sent to draw water begin by drinking themselves, the army is suffering from thirst.
Agile analogy	Developers should be involved and committed to success, but they should also respect discipline.
Business management	Once one's own interest comes above the interest of the business, once the trust between the manager and the employees is shaken, the business success may be greatly affected.

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 describe 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, translating the concepts to communicate in business management

Sun Tzu’s Art of War quotes	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.
Agile analogy	Clear acceptance criteria should accompany a user story. Otherwise, the implementation of the user story is in danger of failing.
Business management	The business objectives should be clear and the manager should have the authority and determination to follow them.
Sun Tzu’s Art of War quotes	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.
Agile analogy	Whenever you can add business value to the project, do it.

Business management	Follow opportunities that can grow your business, even if they were not initially planned.
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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, translating the concepts to communicate in business management

Sun Tzu's Art of War quotes	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.
Agile analogy	If there is no MMF in doing some work, you should not waste your resources on it.
Business management	If there is no profit in some business opportunity, 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, translating the concepts to communicate in business management

Sun Tzu's Art of War quotes	Knowledge of the enemy's dispositions can only be obtained from other men.
Agile analogy	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.
Business management	Information about the environment evolution, new markets, new opportunities are of vital importance to grow the business.

14. Conclusions

For thousands of years, humankind has built ideas and strategies in an attempt to get power, money, and dominance over others. Well-established concepts and strategies that showed their appliance in a particular field acquired a good name and fame and are mirrored for trans-disciplinary communication, to support other fields.

The paper has tried to highlight how essential concepts in war and software development are used for trans-disciplinary communication, in particular, to communicate strategies and tactics to successfully conduct business management. Besides software development, war strategies, and business management, the principles and concepts that were analyzed in this paper may be examined in the way they are used for trans-disciplinary communication to other fields.

War and business management continue to be important concerns today and remain among the most durable activities in history. Software development is a modern activity, whose concepts may also be used for trans-disciplinary communication.

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 and business management are. As the national Romanian poet Mihai Eminescu states in his *Glossă, Toate-s vechi și nouă toate* (All is old and all is new).

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