



Flock Theory, Applied (To Scrum)

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Introduction

In this article we look at Flock Theory¹ by D.Rosen for answers to creating highly optimized, self organised Scrum teams. Once we have learned the technicalities of Scrum - the roles, the artifacts and the meetings - we then begin over time to gain an understanding that strong team work and communication is key to a good Scrum team. But how do we achieve that? How do we build a Scrum team and how do we provide for their needs? How do we manage the challenges of the social complexities involved in teamwork?

What is Flock Theory?

According to Rosen, the Flock Theory suggests that groups self organize from the bottom up, rather than the traditional top-down structure. They tend to be more self-directed, creative and imaginative and therefore more capable of weathering anticipated and unforeseen changes.

Flock theory proposes three Axioms:

1. Distance Optimization.
2. Motion Replication.
3. Leadership Maintenance.

We will look at each Axiom in detail and talk about how they can help us with our Scrum teams. I do not intend to reproduce Flock theory in this article. The referenced Flock theory is available to read online (free of charge) at the following url:

<http://tinyurl.com/4zuw3s>

Distance optimization

Flock theory states that teams need to find a balance between excessive autonomy and too much dependence. Teams which exhibit excessive amounts of autonomy have a tendency to dissolve over time; teams which are overly interdependent tend to stifle creativity. Thus in Scrum we need our teams to be balanced along this fine line during a sprint, giving them the freedom to achieve the sprint goal in the best way the team can find, thus encouraging creativity. Scrum teams need to be aware of the bigger project and enterprise picture when delivering iterations in order to come up with creative solutions; however, teams should conform to company standards and be aware of other teams working on the same project in order to maintain the sense of their own single team to achieve the end goal of the sprint and release. In Scrum we have a number of tools and options that enable this on a daily basis. These are the team boards (both white and task), Scrum of Scrums and daily Scrum meetings. The team board is an essential tool used in a majority of successful Scrum teams to communicate progress, tasks, goals and impediments. A good practice is to place both the current sprint goal and the project goal clearly on the team board for all to see. This can then be referenced frequently by the team to ensure correct positioning within the project. The Scrum of Scrums allows a number of teams to communicate their progress across each other to help identify critical paths, dependencies and to allow all teams to attain the correct “Distance Optimization”. Distance optimization and “big picture” visibility can also be gained from the daily scrum meeting and from team members attending other team Scrums. The latter provides a very similar outcome to the Scrum of Scrums. Team gatherings such as these could be considered “Flocking”, gathering of the teams and team members to align with each other and head towards the common goal at the most optimal level of performance.

Flock theory also talks about extremes of cohesion (too close or too far) reducing productivity, with high cohesion leading to ‘Groupthink’, a type of thought exhibited by group members who try to minimize conflict and reach consensus without critically testing, analysing, and evaluating ideas.² Interestingly enough, we also see that teams should avoid becoming too convergent and homogenous; the teams must remember the big picture and as importantly remain cross functional in nature. Traditional software development groups commonly have specialist developers or teams of developers that have a certain technical or domain specialist silo of skills such as the database-specific team or accounts team. Scrum teams, however, strive for cross functional teams and in doing so avoid the homogenous issues raised by flock theory. But how can we create cross

functional teams? The most common method to achieving this is to implement pair programming as part of the standard development practice. Scrum is a non-prescriptive framework and as such does not talk about engineering practice such as this, however highly performing Scrum teams usually implement eXtreme Programming (XP) inside the Scrum framework; XP does prescribe activities such as pair programming and test driven development.

Interestingly in its discussion of Distance Optimization, accountability is covered as key topic. It states that individuals must be able to justify the group's decisions. What does this mean for our Scrum teams? Well we can apply this concept, for example, directly to estimation. Tools such as Planning Poker^{® 4} help our teams to come to an agreement over an estimate and through any discussions of differences in estimation and subsequent agreement, each team member should be able to justify the team's decision (in this the estimate). This practice should also roll onto concepts such as design decisions and any changes in direction the team may take during a sprint.

We then see that the team needs to support new ideas raised by team members which may at first seem a little left of field. It is important that the team is initially supportive of new ideas and direction to aid in problem solving and team performance optimization. We also observe that many teams will elect to remove those team members who are not accountable. This appears rather quickly through the "Direction Matching" and "Velocity Matching" concepts of flock theory discussed below. This is an issue that in reality is hard to deal with at both the team level and HR level. So how do we achieve this rather fine balance of distance optimization? Axiom 2 "Motion Replication" provides some concepts which can help us.

Motion Replication

This Axiom provides us with concepts to help promote successful distance optimization. It can be broken down into two simple and easily applied concepts of “Direction matching” and “Velocity Matching”

For **Direction Matching** we see that the team must converge to a common direction, i.e., a goal. This highlights the importance of each being aware of the goals of the project, both at the big picture level (deliver a new website) and sprint level (deliver the user maintenance functionality). Scrum provides clear guidelines for sprint goals. It is the sprint goal that should be used to focus the items for selection into the sprint AND to measure the success of the sprint during the review and the retrospective. What we also need to ensure is that the team are aware of the larger goals of the project, i.e. "What are we delivering as an end goal and what is its business value?" "What is the release plan?" "Is there an expected delivery date or scope?" The team performs subsequent direction matching each day at the daily scrum meeting. The daily scrum allows all team members to observe directions of each team member in order to identify any possible collisions and any impediments. The daily scrum is an essential part of direction matching and indeed velocity matching (see below). In our discussions of Distance optimization we also talked about the usage of the team boards to display progress, impediments and goals. The team board facilitates direction matching, velocity matching and distance optimisation thus proving to be an invaluable tool in successful Scrum software development.

Velocity Matching is an easy concept to understand within a team. For a team to be high performing each of the team members must work at or around the same velocity as the other team members, at least at the level of message interchange. For our Scrum teams this means the team members should all be committed to the end goal and motivated to work at the same velocity as their peers. The question arises as to what should the team do if a team member does not match the teams velocity? I'll let the team decide, but I would suggest that the same approach for handling extreme dissenters in Direction matching.

Leadership Maintenance

Axiom 3 talks about Leadership maintenance and raises three interesting concepts: leaders who guide the group to the goal, constantly changing leadership and the shifting of leadership in an efficient manner. The latter of these two concepts may throw a cat amongst the pigeons for some Scrum teams, we will cover this in more detail later on.

The first and probably most obvious is that the leaders of the group must continually drive the group to their goal. For Scrum this means the ScrumMaster helps the team maintain its focus and direction. Nothing new here. However it does confirm that the role of the ScrumMaster is an essential part of Scrum and Flocks. The team left to their own devices, may indeed converge on a path which does not meet the goal of the group. The ScrumMaster provides feedback of action to goals on a regular basis to the team.

Flock theory talks about the need for a constantly changing leadership, the idea being that the leadership remains fresh and focused and never tires or loses sight of the long term end goal. By changing leadership on a regular basis we avoid exhausting the leader and suffering from energy decay. Interestingly it would seem that the individual who has not lead the group for the longest amount of time has built up the most potential energy. How do Scrum teams do this? Each member of the team takes turns to be the ScrumMaster for the team. Thus we have constantly changing leadership of the team and are hopefully utilizing the maximum amount of “potential energy” in each leader. The reason I have seen teams do this is to remove the illusion of “command and control” that the ScrumMaster may have or built up, in the effort to maintain a “fresh leader”. Rotating of the ScrumMaster helps each team member to appreciate the role that the ScrumMaster performs on a daily basis and allows each individual to appreciate more directly that the ScrumMaster has no real control over the team. I have observed one team in particular go through this process. They gained a higher level of ownership and commitment through the understanding that they [the team] were fully in control of the project and each sprint deliverable and were not being driven by a ScrumMaster ‘manager’.

In contradiction to this concept, there is a good deal of debate in the Scrum community around what features and skills are required in a good ScrumMaster.³ The ScrumMaster plays a pivotal role in the Scrum team and is required to perform a range of duties such as impediment removal and Scrum coaching all without command and control. Removing impediments for the team can require a person with a substantial amount of inter-personal skills and a good network of contacts within the

organization. So the real question here is....Is every team member capable of performing the role of the ScrumMaster adequately and effectively?

However, is the leader actually the ScrumMaster? It is natural for a team or group of people to work together and a leader to emerge from the group during their interactions. Scrum teams work on delivering business value as a team. In most teams the ScrumMaster does not actually deliver functionality and on this basis would not be considered as part of the team. Stein, Hoffman, Cooley and Pearse (1979) proposed a "*valence model of emergent leadership*" that proposed that the process of emergent leadership passed through three distinct stages. Those stages were identified as

- 1) **Orientation:** During the orientation stage, potential leaders are believed to announce their "candidacies" for the emergent-leadership position
- 2) **Conflict:** During the conflict stage, two or more leaders pass the "candidacy threshold" causing leadership conflict.
- 3) **Emergence:** Finally, in the emergence stage, group members willingly subordinate themselves to the leader who has passed the "emergence threshold."

I propose that in a "Performing Scrum team" the team goes through this process on a regular basis as the project throws various challenges at them, requiring different skills and abilities to achieve success. Whilst we strive for cross functional teams it is inevitable that one team member will have more experience or knowledge in a particular business or technical silo. As the team approaches this silo, that person (or persons) go through stage 1 (Orientation) and express their knowledge, skills and advice to the team. If there is more than one person that does this, there will be some element of Conflict [Stage 2] and finally Emergence [Stage 3] of the leader occurs. This leader guides the team through the focused block of work, at the end of which the team deliver. As the focus of the team then moves to other areas, this process is more than likely repeated, hopefully with a different leader emerging - demonstrating a cross functional team.

The third and final point of Axiom 3 is that the leadership change should occur in an efficient manner and with sufficient information exchange. It's natural then that the Scrum team rotate the ScrumMaster role at the end of every sprint. We have team reviews and retrospectives that allow the team as a whole to demonstrate and review progress and "inspect and adapt". Thus we have a natural and obvious pause in the cycle to perform an efficient and swift change in leadership.

Summary

Flock Theory proposes some obvious and not so obvious concepts to group activity. We have looked at the three core Axioms of the theory: Distance Optimization, Velocity Matching and Leadership Maintenance and how they could help us build and maintain high performance Scrum teams or flocks.

In summary the following applications of Flock Theory are:

- Scrum teams need to find a balance between autonomy and dependence.
- Scrum teams should avoid becoming homogenous.
- Tools such as planning poker should be used (and their resulting discussions) to enable each team member to justify the teams decisions avoiding groupthink.
- The team should openly support new ideas . However dissenters should be removed from the team.
- Team members should match the teams velocity
- ScrumMaster must constantly guide the team to their end goal
- The ScrumMaster should be rotated to avoid energy decay and maximise potential energy usage. The assumption being made here is that all team members have the appropriate skills and personalities to perform the role.
- Rotation of ScrumMaster to occur at the end of each sprint, for the most timely and efficient handover.

In a follow up to this article I will look at Eisenbergs “Jamming: Transcendence Through Organizing” which flock theory references and has some interesting synergies with Scrum teams.

References

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5. Scrum Alliance : <http://www.ScrumAlliance.org>
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