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Structuring the Start-up: How Coordination Emerges in Start-ups through Learning Sequencing

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Abstract:	To succeed in growing and scaling their organization, start-ups must establish roles, routines, rules, and plans that coordinate organizational activities. However, early-stage start-ups often lack such coordination mechanisms. Through a longitudinal qualitative multiple-case study of five start-ups, we develop an emergent theoretical framework for how start-ups develop and improve coordination over time. We find that start-ups establish coordination through a learning sequence consisting of four distinct learning styles. To develop coordination successfully, start-ups anticipate coordination problems before they escalate, steal ideas and frameworks from others, experimentally implement coordination, and combine and simplify coordination mechanisms. By providing a processual understanding of how start-ups develop coordination, we contribute to the literature on coordination in start-ups, which has tended towards static explanations. We also add to the literatures on emergent coordination and organizational learning, as we highlight the role of deliberate learning in developing coordination, and how different learning styles link together to create learning sequences.

Structuring the Start-up: How Start-ups Develop Emergent Coordination through Learning Sequencing

Marius Jones

NHH Norwegian School of Economics
and
Centre for Applied Research (SNF) at NHH
maris.jones@nhh.no

Peter Kalum Schou

BI Norwegian Business School
peter.k.schou@bi.no

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STRUCTURING THE START-UP: HOW COORDINATION EMERGES IN START-UPS THROUGH LEARNING SEQUENCING

ABSTRACT

To succeed in growing and scaling their organization, start-ups must establish roles, routines, rules, and plans that coordinate organizational activities. However, early-stage start-ups often lack such coordination mechanisms. Through a longitudinal qualitative multiple-case study of five start-ups, we develop a theoretical framework for how start-ups develop and improve coordination over time. We find that start-ups establish coordination through a learning sequence consisting of four distinct learning styles. To develop coordination successfully, start-ups anticipate coordination problems before they escalate, steal ideas and frameworks from others, experimentally implement coordination, and combine and simplify coordination mechanisms. By providing a processual understanding of how start-ups develop coordination, we contribute to the literature on coordination in start-ups, which has tended towards static explanations. We also add to the literatures on emergent coordination and organizational learning, as we highlight the role of deliberate learning in developing coordination, and how different learning styles link together to create learning sequences.

Keywords: entrepreneurship, emergent coordination, teams, organizational learning, learning sequencing, multiple case study

To succeed, start-ups must establish coordination mechanisms —roles, routines, rules, and plans— that integrate team members' efforts toward a common goal (Davis, Eisenhardt, & Bingham, 2009; Sine, Mitsuhashi, & Kirsch, 2006; Okhuysen & Bechky, 2009). Start-ups' early-stage coordination influences both initial performance and long-run development (Baron & Hannan, 2002; Beckmann & Burton, 2008; Sine et al., 2006). Thus, start-ups must establish coordination mechanisms that allow for the efficient use of their scarce resources while being scalable and malleable enough to tackle increasing complexity and possible strategic reorientations (Desantola & Gulati, 2017; McDonald & Gao, 2019; Sine et al., 2006).

However, while recent research illuminates the important role of coordination in start-ups (Burton, Colombo, & Rossi-Lamastra, 2019; Davis et al., 2009; Jung, Vissa, & Pich, 2017; Patzelt, Preller, & Breugst, 2020; Shepherd, Souitaris, & Gruber, 2020), we know less about how coordination emerges and develops during the crucial stage after a start-up's formation (Blatt,

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3 2009; Jung et al., 2017; Patzelt et al., 2020). This presents a critical knowledge gap; start-ups face
4 unique challenges and work differently from established organizations (Burton et al., 2019; Jung
5 et al., 2017). Unlike established firms, start-ups comprise small teams (Knight, Greer, & De Jong,
6 2020), which are often managed through founders' personal judgment rather than strategic
7 planning (Patzelt et al., 2020). Moreover, start-ups are often launched by peers and therefore lack
8 the necessary authority to design and implement coordination mechanisms (Jung et al., 2017). As
9 such, coordination will likely emerge through ongoing everyday processes rather than top-down
10 design (Aldrich & Ruef, 2018).
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21 To understand how coordination develops through daily activities on the ground, scholars
22 draw on the perspective of *emergent coordination* (Okhuysen & Beckhy, 2009). As work in many
23 modern organizations has become less hierarchical and more flexible, these scholars argue that
24 coordination emerges through daily interactions rather than top-down planning. Coordination
25 refers to “*the process of interaction that integrates a collective set of interdependent tasks*”
26 (Okhuysen & Becky, 2009: 463), accomplished through emergent practices, such as rules and
27 plans, routines, and roles (2009: 472). As start-ups must be flexible and responsive to their
28 environment and often are non-hierarchical, the emergent coordination perspective is a fitting lens
29 through which to understand how they develop coordination. Research on *emergent coordination*
30 shows how small organizations and teams, such as SWAT teams (Bechky & Okhuysen, 2009),
31 medical teams (Valentine & Edmondson, 2015), and artist groups (Harrison & Rouse, 2014;
32 Stephens, 2020), continuously solve diverse challenges by rearranging roles and routines (Bechky
33 & Okhuysen, 2011; Okhuysen & Bechky, 2009).
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51 However, unlike the more mature teams and organizations the emergent coordination
52 literature studies (c.f. Bechky, 2006; Becky & Okhuysen, 2011; Jarzabkowski et al., 2012;
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3 Schakel, Fenema, & Faraj, 2016), start-ups lack existing routines and roles (Blatt, 2009; Cohen et
4 al., 2019; Jung et al., 2017) and, therefore, are often quite immature regarding coordination
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6 (Aldrich & Ruef, 2018; 467). For example, more mature organizations commonly have
7
8 institutionalized role structures and encompass clear expectations, norms, and tasks they have
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10 developed over time (Hannan & Freeman, 1984). Therefore, the roles serve as critical
11
12 “scaffolding” for coordination, even allowing strangers to “plug into” a team because it clearly
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14 defines what they should do and how they should complement other members (Valentine &
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16 Edmonson, 2015: 411). Comparatively, the roles in a start-up, such as CEO and CTO, frequently
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18 lack clarity and clear expectations (Jung et al., 2017; Knight et al., 2020). Also, start-ups often aim
19
20 to scale, further distinguishing them from teams studied in the emergent-coordination literature.
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22 The desire to scale increases complexity alongside the need to adapt coordination over time
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24 (Desantola & Gulati, 2017). Overall, we know less about how start-ups develop coordination
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26 mechanisms and how coordination emerges from a foundational stage when routines and
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28 professional roles are underdeveloped.
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35 To address this puzzle, we ask: (1) *How do start-ups develop coordination over time? and*
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37 (2) *How does successful coordination affect organizational performance?* To explore these
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39 questions, we conducted an inductive multiple-case study of five early-stage start-ups (Eisenhardt,
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41 1989). We followed these start-ups for 22 months, relying on interviews, observations, and
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43 external archival data, to gain rich insight into their social processes. Our research design allowed
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45 us to compare the five start-ups on their ability to develop coordination mechanisms. We found
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47 that start-ups that sequenced the diverse learning styles of *anticipatory learning, vicarious*
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49 *learning, experimental learning, and trial-and-error learning* were better at realizing the need for
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51 coordination mechanisms before coordination crises emerged, choosing which mechanisms to use,
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3 and implementing and adjusting mechanisms. Furthermore, our findings suggest a link between
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5 coordination and start-ups' performance, as measured by growth, received funding, and job
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7 satisfaction among the team members.
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10 Our paper contributes to conjoined debates in the nexus around coordination in start-ups
11 (Burton et al., 2019; Klotz, Hmielski, Bradley, & Busenitz, 2014; Patzelt et al., 2020), emergent
12 coordination (Okhuysen & Bechky, 2009; Schakel et al., 2016), and organizational learning
13 (Cohen et al., 2019; McDonald & Eisenhardt, 2020; Ott & Eisenhardt, 2020). Our core contribution
14 is a theoretical framework that outlines how start-ups learn to coordinate through sequencing
15 complementary learning styles, allowing them to integrate members' efforts toward a common
16 goal (Okhuysen & Becky, 2009) and scale their organizations (Patzelt et al., 2020). Then, we
17 extend the emergent coordination literature by outlining how organizations learn to coordinate
18 from an immature state with underdeveloped routines and roles. In particular, we point to the
19 importance of deliberate learning in developing coordination. Finally, we add to the organizational
20 learning literature by showing how different learning styles interact in learning sequences.
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35 **THEORETICAL BACKGROUND**

36 **Coordination in Start-ups**

37 Start-ups must develop successful coordination to survive (Aldrich & Ruef, 2018; Burton et al.,
38 2019; Sine et al., 2006). So far, research on coordination in start-ups has been dominated by large
39 quantitative studies that have understood coordination as top-down organizational design, which
40 is "hard wired" into the start-up at the start by its founders (Baron & Hannan, 2002; Beckmann &
41 Burton, 2008; Burton et al., 2019; Sine et al., 2006). For example, Baron, Hannan, and Burton
42 (2001) argue that coordination appears through different blueprints, referring to overall
43 organizational-design models covering how start-ups motivate, hire, and manage their employees.
44 This research mainly focuses on the impact of these blueprints on start-up success (Beckmann &
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3 Burton, 2008), whether founders change blueprints, and what drives blueprint change (Baron et
4 al., 2001).

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8 Recently, entrepreneurship scholars have noted that this approach lacks nuance and,
9 therefore, risks limiting our understanding of coordination in start-ups (Burton et al., 2019;
10 Desantola & Gulati, 2017; Desantola, Gulati & Zhelyazkov, 2022). For example, Jung et al. (2017)
11 argue that past research assumes that start-up teams operate within a defined structure, thereby
12 neglecting coordination processes that allow such structures to emerge in the first place. Similarly,
13 Patzelt and colleagues (2020) note that most research on how start-ups develop has taken a static
14 perspective, which further limits our understanding of how coordination within them emerges and
15 develops. These are crucial shortcomings for two reasons. *First*, the way start-ups coordinate to
16 become successful radically differs from how large established firms coordinate (Burton et al.,
17 2019; Klotz et al., 2014). For example, Cohen et al. (2019) show that hierarchy and specialization
18 are unlikely to work in start-ups, due to size. Moreover, start-ups must establish flexible
19 coordination mechanisms that they can rearrange as the start-up pivots or attempts to scale
20 (Desantola & Gulati, 2017). In other words, knowledge about coordination in established firms or
21 top management teams is unlikely to transfer successfully to start-ups comprising small teams of
22 peers (Burton et al., 2019; Jung et al., 2017). *Second*, by recognizing the uniqueness of start-ups
23 that distinguishes them from established firms (Klotz et al., 2014), research posits that coordination
24 will emerge differently. For example, start-ups are often managed through personal decision-
25 making rather than formal strategies (Patzelt et al., 2020). Furthermore, Jung and colleagues (2017)
26 argue that because start-ups are often launched by peers, task positions cannot be allocated through
27 formal authority alone. Recognizing these differences, recent research proposes that coordination
28 in start-ups is likely to emerge through daily interactions between more or less equal peers (Jung
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3 et al., 2017; Patzelt et al., 2020). Due to these gaps in our understanding of coordination in start-
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et al., 2017; Patzelt et al., 2020). Due to these gaps in our understanding of coordination in start-ups, recent work calls for longitudinal, qualitative studies to build new theories to explore the matter (Desantola & Gulati, 2017; Patzelt et al., 2020).

Emergent Coordination in Organizations

Coordination has been central in organization studies ever since Lawrence and Lorsch's (1967) and Thompson's (1967) pathbreaking work. Recently, the *emergent coordination* perspective has appeared, focusing on "coordination as it happens, assuming that people in organizations must coordinate the work regardless of the organizational design" (Okhuysen & Bechky, 2009: 469). This literature describes how coordination emerge through actors' daily and informal use of roles, routines, and representational knowledge, such as rules or plans (Bechky, 2006; Okhuysen & Bechky, 2009; Stephens, 2020). For example, Bechky (2006) show how institutionalized roles allow film crews to coordinate even though members lack familiarity with each other. Furthermore, Bechky and Okhuysen (2011) show how teams improve roles, routines and rules and plans by evaluating past performances. However, the emergent coordination literature does not explicate how coordination emerges and develops in the first place. Often focusing on action groups, the literature starts with existing coordination mechanisms and analyzes how these mechanisms break down and are modified, not how they initially emerge. The emergent coordination literature then assumes that teams already have existing scaffolding (Massa & O'Mahony, 2021; 33), such as institutionalized role structures and well-rehearsed routines (Bechky, 2006; Bechky & Okhuysen, 2011). This scaffolding allows coordination to emerge because it outlines roles, routines, rules, and plans. Yet, start-ups generally lack such scaffolding and must learn to coordinate from a rudimentary starting point (Aldrich & Ruef, 2018; Blatt, 2009; Jung et al., 2017). Therefore, start-ups must initiate a learning process in which they identify and install useful coordination mechanisms that allow them to integrate efforts toward a common goal (Aldrich & Ruef, 2018;

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3 Patzelt et al., 2020; 19). This is especially challenging because start-ups are scaling and, thus, must
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5 update coordination to fit a growing organization, while avoiding getting overly rigid (Patzelt et
6
7 al., 2020).

10 **Learning to coordinate in start-ups**

11 Researchers reveal five key learning styles that describe how organizations learn¹ (Bingham, 2009;
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13 Bingham & Davis, 2012; Miner, Bassoff, & Moorman, 2001): (1) experimental learning: how
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15 organizations *intentionally* test a prototype or initiative in a controlled setting and incorporate the
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17 new knowledge they derive from the test into firm activities (Bingham & Davis, 2012a); (2) trial-
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19 and-error learning: how organizations *unintentionally* learn from the outcomes of past actions (Ott
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21 & Eisenhardt, 2020); (3) improvisational learning: how organizations learn “on the fly,” conjuring
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23 up solutions as problems appear; and (4) vicarious learning: how organizations learn from other
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25 organizations. Finally, more recently, researchers argue that (5) anticipatory learning—learning
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27 by trying to foresee negative outcomes—is a crucial learning style for start-ups because they
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29 cannot survive severe negative outcomes (Bingham & Kahl, 2014).

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35 Although research has made progress in explaining how start-ups learn through various
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37 learning styles, we do not know much about how start-ups learn to coordinate—for instance, how
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39 start-ups learn to divide up tasks and use external knowledge (Patzelt et al., 2020). Researchers
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41 mostly focus on how start-ups learn to navigate their market or develop new products and business
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43 models (e.g. Bingham & Davis, 2012; Bingham & Eisenhardt, 2011; McDonald & Eisenhardt,
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45 2020; Ott & Eisenhardt, 2020). Furthermore, while researchers outline different learning styles (as
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47 listed above), our knowledge of how start-ups learn by combining multiple learning styles is
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49 limited. This is a critical gap, as different learning sequences may have different outcomes
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56 ¹ See appendix for further details on organizational learning styles.
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3 (Bingham & Davis, 2012). It is thus important to study how organizations combine and sequence
4 learning styles (Ott & Eisenhardt, 2020).
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8 Overall, research acknowledges that start-ups need successful coordination mechanisms to
9 secure growth. However, how they learn to coordinate is not well known. Also, we point to a lack
10 of integration between the emergent coordination and organizational learning literatures. While
11 the emergent-coordination literature explains well the mechanisms that allow coordination to
12 emerge in daily activities, it does not explain the antecedents of these mechanisms, assuming their
13 presence at the start (Massa & O'Mahony, 2021; 33). The organizational learning literature
14 explains the antecedents of start-up strategies and business models (McDonald & Eisenhardt,
15 2020; Ott & Eisenhardt, 2020), yet it does not explain how start-ups learn coordination (Patzelt et
16 al., 2020). Therefore, we seek to add to both literatures by analyzing how start-ups learn to
17 coordinate.
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30 **METHODS**

31 **Research Design**

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33 As coordination in start-ups is an understudied phenomenon, we rely on inductive theory building
34 through a multiple-case study to answer our research question (Eisenhardt, 1989). Multiple-case
35 studies are particularly well suited for theory development, as their replication logic usually builds
36 more robust and generalizable theory than single cases (Eisenhardt & Graebner, 2007). We aim to
37 build theory explaining (1) how start-ups develop coordination over time and (2) how coordination
38 affects organizational performance, so we employ a longitudinal research design (Langley, 1999).
39 To reduce the influence of post-hoc rationalization, we collected data in real time before the final
40 outcomes were known (McDonald & Eisenhardt, 2019).
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53 We followed five start-ups over 22 months. As we wanted to explore how coordination
54 emerged and developed at the early stages of a start-up's lifecycle, we decided to theoretically
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3 sample the internal characteristics of the start-ups (Eisenhardt, 2021). To sample, the first author
4 visited eight coworking spaces that catered to between 10 and 20 start-ups each. This resulted in
5 an initial population of approximately 120 start-ups. We then sampled, using the following criteria.
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10 *First*, we excluded start-ups that were parts of accelerators; such programs influence start-ups'
11 development (Cohen et al., 2019). This reduced our sample to around 60 start-ups. *Second*, to
12 ensure that the start-ups were similar, we focused on small (< 7 members), young (< 3 years), and
13 immature (little or no revenue) start-ups in similar industries (all had a digital aspect). This resulted
14 in 9 start-ups that were willing and able to participate. *Finally*, we excluded 4 start-ups that worked
15 remotely or focused on delivering consultancy services rather than a scalable product/service.
16 Hence, we finally obtained five start-ups with comparable *business models*, as they all tried to
17 build a digital platform or a digital brand in one case (Balder); *maturity*, as none had made
18 significant market breakthroughs; and *activities*, as all start-ups engaged in digital business
19 development activities with uncertain outcomes. Having start-ups with similar initial conditions
20 allowed us to compare how they managed to scale and grow over time. This type of *racing* design
21 (Eisenhardt, 2021) is particularly well suited for identifying why some organizations succeed and
22 others do not. Table 1 summarizes our cases and data collection activities
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44 **Data Collection**

45 Participant observation and semistructured interviews were our main data-collection methods.
46 Engaging in participant observation, the first author visited each startup between 8 and 15 times
47 over 1.5 years, resulting in a total of 52 visits (over 240 hours) to the start-ups, capturing
48 observations as field notes. As an observer in the office spaces of the case firms, we had access to
49 the start-ups' daily activities, including both internal meetings and client meetings, alongside
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3 social events. The first author participated as a quiet observer but also asked follow-up questions
4 and conducted informal interviews during lunch and coffee breaks. For members of these start-
5 ups, most work involved using a personal laptop. As such, the first author could bring a laptop to
6 take notes relatively unnoticed while observing in meetings and office spaces. Reflecting on the
7 presence of the first author, a team member in Odin stated, "*We no longer notice that he is here.*"
8 The length of the field notes varied with the level of activity in the start-up on the observation day.
9
10 Some days were full of planned and sporadic meetings and discussions between start-up members,
11 resulting in rich field notes of more than 15 pages of condensed text. However, on other days, all
12 members would spend most of their day completing individual work on their laptops, resulting in
13 shorter field notes. Overall, participant observation allowed us to capture how team members
14 communicated and solved problems on a daily basis, helping us form an initial understanding of
15 the cases and map patterns of behavior within each start-up (Watson, 2011).
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31 We conducted 96 interviews over three rounds. Interviews lasted between 20 minutes and
32 two hours, amounting to 93 hours of interview recordings. During the first round of interviews,
33 the first author had one-to-one conversations with all members in each start-up. Most of the initial
34 interviews happened during participant observation; when start-up members had some downtime
35 or wanted to talk, the first author had an interview guide and recorder readily available. We asked
36 broad and open-ended questions about their daily lives in the start-up and the informant's
37 background, such as, "*What does a normal day at work look like for you?*" Based on the initial
38 interviews and observations, we further developed the interview guide as our focus sharpened. Our
39 later interviews were often planned in advance and focused more on the challenges that we had
40 observed and how the start-ups worked to improve coordination among team members. Some
41 informants talked freely and eagerly about their start-up's routines, rules, and roles, while others
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3 viewed coordination mechanisms as uninteresting. We allowed those who talked freely to do so
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5 but probed all informants about how the coordination mechanisms we observed had emerged. We
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7 taped and transcribed the interviews.
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10 We also used archival sources, such as social media posts and newspaper articles. These data
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12 were a source for seeing how well the start-up was doing externally, measuring market growth and
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14 received funding, and facilitating triangulation across data sources (Eisenhardt, 2021). As a final
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16 step to secure the validity of our findings, we conducted member checks with our cases (Lincoln
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18 & Guba, 1990).
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21 **Data Analysis**

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23 In our initial within-case analysis (Eisenhardt, 2021), the first author wrote down detailed case
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25 stories on each start-up, with informant quotes and observations. The second author read the cases
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27 and examined the data to form an independent perspective and to check the first author's analysis.
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29 We used field notes to describe how each start-up coordinated its activities on a day-to-day basis,
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31 along with how it added and adapted new coordination mechanisms. We noted that all start-ups
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33 organized their members into teams working on different projects, and we observed variation in
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35 coordination mechanisms within each start-up, both over time and across these project teams. For
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37 example, Freya and Frigg developed their coordination mechanisms when they added new
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39 members, and Odin onboarded a new CEO towards the end of data collection who made substantial
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41 changes in the start-up's routines. Moreover, while a low level of within-start-up variation in
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43 coordination mechanisms characterized some start-ups (Freya, Odin, and Thor), other start-ups
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45 (Frigg and Balder) had considerable variation internally across their project teams. While multiple-
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47 case studies often focus only on variations between cases (Eisenhardt, 1989), we used within-case
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49 variation to explore how coordination changed over time and whether each start-up shared and
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51 scaled coordination practices internally. As we developed our analysis, we used interview data to
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3 deepen our understanding of *why* coordination mechanisms emerged and developed differently
4 across cases. In particular, the interview data allowed us insight into how informants viewed
5 coordination, how and what they learned about coordination over time, and their thoughts behind
6 developing certain coordination mechanisms.
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12 Having built an understanding of each case, we went on to cross-case comparisons, to
13 answer our research questions. Here, we sought to identify the best-performing cases through two
14 steps (c.f. McDonald & Eisenhardt, 2020). Our first step was to score each start-up regarding its
15 coordination mechanisms (see Table 2). Drawing on the emergent coordination literature, we
16 scored each case on three established types of coordination mechanisms: 1) rules and plans, 2)
17 routines, and 3) roles (Okhuysen & Bechky, 2009). Rules and plans are guidelines that establish
18 relationships between different parts of the organization and serve to guide decisions and how
19 work is performed (2009, p. 473). Routines are templates for task completion, describing repeated
20 patterns of behavior in social interactions between members (2009, p. 477). Roles are
21 “expectations associated with social positions” (2009, p. 475), a description of “who does what”
22 in an organization. Our second step was to link these mechanisms to organizational outcomes,
23 which we determined by scoring each case on objective measures (market growth and funding
24 received) and employee job satisfaction in the start-up. To ensure consistency, we scored the cases
25 regarding coordination mechanisms and organizational performance at both the midpoint and the
26 end of the data collection. We found a clear link between coordination mechanisms and outcomes,
27 paralleling previous research (Sine et al., 2006). In Tables 2 and 3, we present in detail our scoring
28 of each case.
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By scoring our cases, we identified one high performer (Freya), three medium performers (Odin, Frigg, and Balder), and one low performer (Thor). The high-performer, Freya, attained impressive sales growth, expanded its business to international markets, and completed multiple successful venture rounds. Thus, they outperformed the other start-ups along common performance indicators (c.f. McDonald & Eisenhardt, 2020). Furthermore, our interview data indicate that Freya also had the most satisfied members. The medium performance ranged from achieving some growth and surviving (Balder²) to doing well and obtaining strong growth and some venture funding (Frigg and Odin). Among the medium performers, job satisfaction was not at as high a level, with members more frequently expressing discontent in interviews. Our low performer, Thor, failed at the end of the data collection, due to low-level growth while suffering from internal dissatisfaction. As we scored the cases, we noticed a link between the level of coordination mechanisms and performance. Freya had more developed coordination mechanisms than the medium performers, while the medium performers displayed greater development than the low performer. We further strengthened this link between coordination mechanisms and performance through follow-up interviews and member checks.

Having identified a high performer (Freya), we analyzed this case in depth to explain why they had been better able to develop and improve coordination mechanisms. Iterating between data and theory (Eisenhardt, 1989), we arrived at a deadlock in the emergent coordination literature. The literature works with the assumption that much organizational scaffolding is in place in the beginning and, therefore, does not explain how organizations develop coordination from an

² At the end of our data collection, Balder made a serious pivot where the founder restarted the venture completely.

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3 immature stage (c.f. Massa & O'Mahony, 2021; 33). As we struggled with this issue, we realized
4 that informants in Freya were describing learning when discussing how they came up with
5 coordination mechanisms. Focusing on how Freya learned coordination, we found that it occurred
6 by combining anticipatory, vicarious, experimental, and trial-and-error learning into a sequence.
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8 We found this approach to surpass how the other start-ups were developing coordination, as Table
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15 4 shows.

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18 INSERT TABLE 4 ABOUT HERE
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21 Identifying learning styles and sequencing was a challenge, as it is difficult to measure and
22 distinguish different learning styles (Bingham & Kahl, 2014: 102). To solve this challenge, the
23 second author acted as an outsider, to check the first author's coding and contribute new
24 suggestions based on theory (Bartunek & Louis, 1996). Furthermore, the first author used a follow-
25 up round of interviews to conduct member checks, allowing us to further develop and validate our
26 interpretations. Finally, we identified alternative explanations (see "Limitations").
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35 We then followed a replication logic, in which we compared the other cases to Freya by
36 scoring them across the four learning styles (c.f. Murray, Kotha, & Fisher, 2020). Our comparative
37 analysis (see Tables 5–8) allowed us to create a theoretical framework (Eisenhardt, 2021) on how
38 start-ups learn to coordinate by combining different styles of learning.
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44 FINDINGS

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46 We found that start-ups were able to develop coordination by sequencing learning styles. Each
47 learning style had a unique contribution to their ability to develop coordination. Moreover, we find
48 that these learnings styles both complement and prompt each other. In this section, we focus on
49 the "best practice" sequence (i.e., Freya's) for developing coordination. Moreover, we outline how
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3 this sequence replicated across cases, as well as how it affected coordination when start-ups
4 followed alternative sequences or failed to learn how to coordinate.
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7 **Anticipating Coordination: How Start-ups Detect Future Coordination Problems through** 8 **Anticipatory Learning** 9

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11 Our high performer and two medium performers engaged in anticipatory learning to develop
12 coordination mechanisms. We found that anticipatory learning was useful for developing
13 coordination because it allowed start-ups to foresee potential coordination problems before they
14 escalated, thereby starting the process of coordination emergence. When *anticipating coordination*,
15 start-ups took a forward-looking perspective, seeing coordination as a prerequisite for scaling. In
16 the best case (Freya), the whole team endeavored to foresee potential coordination problems before
17 they escalated. In practice, this led start-up members to point out potential coordination problems,
18 opening for discussions around coordination mechanisms that could alleviate those problems.
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20 Table 5 provides a definition and further explanation and comparison of the cases.
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33 INSERT TABLE 5 ABOUT HERE
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36 Freya, the high performer, worked from the beginning with the assumption that coordination
37 was needed for their start-up to flourish. Even when they were just two co-founders, they decided
38 to establish meeting structures to discuss potential problems. As one co-founder noted, "*We started*
39 *to introduce these meeting routines when we were only two people.*" Freya's founding team came
40 from a military background and had a strong focus on achieving order. As such, they saw trying
41 out different coordination mechanisms as a way to continuously improve the organization and
42 grow the firm:
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52 *If you as a start-up do not dare to test new systems, then you will become a clumsy organization*
53 *when you begin to grow. You need the mentality to try new things because we face new*
54 *challenges all the time. The goal is not to have a lot of meetings. That is exactly why we use the*
55 *systems; to get rid of unnecessary meetings.* (Co-founder 2, Freya)
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3 Freya would often engage in this *forward-looking* behavior where the co-founders and team
4 members would try to anticipate coordination problems before they escalated. An example of how
5 this manifested was in Freya's onboarding behavior. As Freya often hired students without
6 experience, the co-founders paid considerable attention to team-building. For example, one of the
7 co-founders noted that as one of their team leaders had more than 15 years of experience, conflicts
8 could arise between the team leader and the students.
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12 Moreover, both founders and team members anticipated problems that could arise in a
13 growing organization. For example, one member noted that the growth might have put Freya at a
14 "breaking point" regarding how their meetings were run:
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24 *But now we feel that we are at a breaking point in terms of the time we use; is it okay that*
25 *we use up to two hours for everyone to have an understanding of direction? Of course, it is*
26 *important that everyone agrees on where everyone should go, but we are beginning to be at*
27 *the limit of how many we can be, gathered at these meetings, and if we can justify the time*
28 *spent. (Team Member 3, Freya)*
29

30
31 This forward-looking behavior, where the team members would play a part in anticipating
32 problems, helped Freya foresee issues before they escalated and allowed the co-founders to get
33 continuous feedback on the state of the start-up: "*Our people are good at evaluation, so we get*
34 *continuous feedback on how we can become more effective. We are always trying to improve. How*
35 *can people become more autonomous? How can we become more effective? These things are tied*
36 *together"* (Manager/Co-founder 2, Freya). This helped Freya fix issues that were starting to bother
37 their team. An example of this was Freya introducing "meeting-free Wednesdays," when the co-
38 founders noticed that team members were not reaching all of their objectives. Hence, they would
39 actively probe the members to find out why:
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52 *Every week, all team members have 3 objectives. Sometimes they only achieve 2 out of 3.*
53 *That's not necessarily wrong, but you need to step back and ask "why." It's often useful to*
54 *ask "why" five times: "Why did you not achieve your objective?" "Well, I don't have enough*
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3 *time.* “*Ok, why did you not have enough time?*” “*Well, there are too many meetings.*” *Then*
4 *you found the problem!* (Co-founder 2, Freya)
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6 Accordingly, Freya introduced the rule of “*meeting-free Wednesdays,*” stating that no internal
7 meetings were to take place on Wednesdays, so that team members could “*engage in deep work.*”
8
9 The effect of this rule was that members reported feeling less stressed.
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13 *Anticipating coordination* allowed Freya to build a “culture” of forward-looking continuous
14 improvement, where team members tended to blame errors and mistakes on a lack of structure
15 rather than individual mistakes. As Freya scaled, the start-up experienced multiple challenges,
16 such as members becoming overloaded with tasks and finding it harder to set priorities. A team
17 member noted, “*If I try to prioritize everything, I will just become an overworked zombie,*” and
18 “*When we try to do too much, it’s hard to also be creative*” (Team member 1, Freya). However,
19 Freya anticipated these problems and adapted accordingly. Another team member described, “*If*
20 *we see that we have a hole in a process or routine somewhere, then we work pretty hard to find*
21 *something that can fill that hole*” (Team Member 3, Freya).
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34 The second co-founder provided a telling analogy of this forward-looking culture. He
35 compared Freya to a sprinter wanting to win the Olympics. To do so, he said, you need to train
36 every day and find small ways of improving. If you did not do so, you would not maximize your
37 potential.
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43 Similarly, a medium-performing start-up, Frigg, also exhibited some anticipation, even
44 though they had the youngest and most inexperienced founder. This anticipation also manifested
45 itself in their onboarding approach. For example, during data collection, the developer team in
46 Frigg grew from two people to nine. To secure effective development, team members focused on
47 improving the teams’ project management routines:
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3 *We went from two to five developers, and suddenly we were a team. Then, I wanted our team*
4 *members to be more autonomous; at that time, I had to define and delegate each single task*
5 *that was carried out in the team . . . We introduced a few processes. For example, people review*
6 *each other's codes. We also do a few other things that help us avoid bugs. It helps us estimate*
7 *how much work we can do and to align our efforts. (Team member 5, Frigg)*
8
9

10 Furthermore, anticipation would manifest in Frigg's developer team, where they would use sprint
11 reviews to discuss potential future problems. For example, in a sprint review meeting that the first
12 author observed, the team discussed how the front-end and back-end developers had too little
13 interaction. While this had not yet caused any problems, it represented a risk, as the front end and
14 back end of software development require integration. If the parts developed independently, this
15 integration could fail or slow down. By anticipating this potential issue early on, the developer
16 team decided to rearrange roles so that some of the front-end developers would work on the back-
17 end solution in the coming week, and vice versa. Team member 4 later reflected on these meetings,
18 stating, *"It's easier to make progress toward our goals. And it allows you to get feedback on your*
19 *work. You learn from your own mistakes, and the mistakes of other people. I really like it!"*
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33 However, anticipation was not as widespread elsewhere as in Freya. While Frigg's founder
34 perceived the need for coordination, he believed that it was not necessary at an early stage: *"I have*
35 *discussed this with many managers and such, and it is recognized that when you are around 10–*
36 *15 people, then you need to have structures in place. Yet, this development can be very hard, as*
37 *many have said."* Thus, anticipation was not as ingrained in Frigg as in Freya.
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45 Balder, another medium performer, further backed our notion that anticipation was
46 important. Like Freya, Balder had a positive view of structures and quickly decided to set up
47 coordination. When the first author visited Balder in their very early phase, the members had
48 already hung a large whiteboard in their office space. On this board, there was a goal hierarchy,
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3 KPIs, and a matrix with start-up members and “to-dos.” The CEO described a very organized
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5 setup:

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8 *“It’s me, the Logistics Lead, and Manager 3 who are the main decision-makers (business*
9 *development); then there are Team member 1 and Team member 2 who work on design—I work*
10 *closely with them. Manager 3 works with Team member 3 and Team member 4 on logistics,*
11 *and we also have Team member 5 and Team member 6 on marketing.”*
12

13 Like Freya, managers in Balder anticipated a need for coordination and saw it as important to
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15 infuse a clear structure:

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18 *I have talked to my team about it, and they want clearer objectives. I think that is important, to*
19 *be able to measure progress and to challenge people to do their best. Without clear goals,*
20 *people become too comfortable. We need something challenging to reach for! Right now, that’s*
21 *missing. (Logistics Lead, Balder)*
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24 Thus, Balder could quickly address problems before they escalated. For example, when the design
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26 team struggled to collaborate with the product-development team, they were very quick to address
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28 the problems. In this particular case, the CEO quickly noted that they needed more organized
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30 collaboration; therefore, they aimed to establish a couple of meetings to solve the issues and
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32 improve how the teams coordinated together.
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35 In contrast, Odin (medium performer) and Thor (low performer) did not anticipate the need
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37 for coordination. In both cases, we found that the reason was that they viewed coordination
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39 negatively. For example, in Odin, members noted, *“Yes, at our previous employer we had goals*
40 *and visions and all kinds of stupid shit” (Team member 1, Odin)*, and stated that *“. . . strategies—*
41 *isn’t that something you come up with when you look back, to explain how clever you where?”*
42
43 *(Founder 1, Odin)*. Odin’s negative view of coordination was surprising as their founding team
44
45 was the most experienced one. Odin’s founders were highly educated and had rich prior start-up
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47 experience.
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3 Thor provides a particularly strong counterexample that demonstrates the importance of
4 anticipation. When our data collection started, Thor— then a team of three people— were working
5 on developing their app. While start-up members experienced issues with how they organized
6 work, we observed that they did not focus on building coordination. The CEO of Thor noted that
7 it was better just to go “with the flow” than to coordinate:
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14 *They (employees) get frustrated and say that they do not know what to do. They see it as we do*
15 *not have any project management. But of course, as a small start-up, you do not have project*
16 *management, you just have to go with the flow to where the money is.*
17
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19 This approach would frustrate members of Thor, who felt that they could not focus on their own
20 tasks. “*There is never a quiet day at the office, always too much to do. It’s plenty of discussion*
21 *and difficult to focus. There is always someone who has something he wants to discuss*” (Manager
22 2, Thor).
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28 An illustrative observation shows how a lack of anticipation can be detrimental. Thor
29 recruited three new members, doubling the size of their team. The first author was present during
30 the first onboarding meeting, which turned out to be quite chaotic and left the newcomers confused
31 regarding their roles. In the coming months, Thor would stick to working as before. This frustrated
32 the newcomers who felt that Thor had not anticipated what to do when they brought in three new
33 members:
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42 *The founders brought us on before they were ready. They did not know what they wanted us to*
43 *do, what roles we should take on. So, we were just stuck in meetings all the time. They were*
44 *unable to let go of their need to control everything and things have been very inefficient. (Team*
45 *Member 3, Thor)*
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48 As time went on, we noted how the lack of anticipating coordination damaged Thor’s
49 functioning. Newcomers were unhappy with the lack of structure, and the managers of Thor were
50 frustrated with the newcomers not performing well:
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3 *We don't get anything done; we have very little traction. And bringing on more people has not*
4 *made things any better . . . It's me and *CEO* that run the show, and perhaps we have turned*
5 *into control freaks. We need to have a say in every matter, and we are unable to organize*
6 *ourselves. (Manager 2, Thor)*
7

8
9 Thus, Thor serves as an example of what happens when a start-up does not anticipate the
10 need to coordinate. Thor failed to successfully onboard new members, and the failure to anticipate
11 that they would need new coordination mechanisms when the team grew was partly to blame.
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15 Overall, some start-ups engaged in anticipating coordination, taking a forward-looking
16 perspective, foreseeing the need for coordination, and seeking to identify coordination problems
17 before they resulted in negative outcomes. Thus, anticipatory learning served as an important
18 precursor to emergent coordination; it motivated start-ups to look for coordination mechanisms
19 that could improve collaboration and allow them to integrate new members.
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27 Why would anticipating coordination lead to more effective coordination in start-ups? *First,*
28 start-ups lack pre-existing coordination scaffolds that in established organizations provide a
29 foundation that allows coordination to emerge from daily activities (Valentine & Edmondson,
30 2015). Lacking such scaffolds, start-ups are more able to develop coordination when they
31 anticipate coordination problems because it motivates a deliberate search for solutions. In essence,
32 when anticipating coordination, start-ups show awareness of their lack of scaffolds and decide to
33 act before this leads to coordination crises. *Second,* research shows that when serious problems
34 occur, individuals often dismiss the need for change or even take actions that reinforce the problem
35 (Bingham & Kahl, 2014: 102). Conversely, if start-ups anticipate them, they can avoid problems
36 and conflicts. The contrast between Freya and Thor concerning the onboarding of new members
37 is illustrative. Whereas Freya anticipated what to do with onboarding and worked to make new
38 members feel part of the team, thus avoiding problems, Thor onboarded without being ready,
39 creating conflict. *Third,* serious problems may trigger strong negative emotions (Breugst &
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3 Shepherd, 2017), leading not only to conflict but to making speaking up and solving problems
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5 constructively more difficult (Grant, 2013).
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7 **Steal With Pride: How Start-ups Identify Coordination Mechanisms through Vicarious** 8 **Learning** 9

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11 While anticipating coordination is important, it does not necessarily result in finding good ways to
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13 coordinate. Instead, anticipating coordination could motivate vicarious learning. The high
14
15 performer and some medium performers identified coordination mechanisms by “stealing with
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17 pride,” borrowing ideas from various sources, such as peers, podcasts, books, and prior experience.
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19 We found that this form of *vicarious learning* was highly effective for developing coordination
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21 because it allowed startups to identify “readymade” coordination mechanisms that they could use.
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23 By contrast, less effective start-ups leaned more toward developing ways of working on their own.
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27 Table 6 provides more details.
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31 INSERT TABLE 6 ABOUT HERE
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34 Members of Freya, the high performer in our sample, said that they “stole with pride.”
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36 Manager 2 noted:
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38 *We never come up with something new, really. We just take what we like from others. We take*
39 *OKRs [concept from a management book by John Doerr], the “good foot theory” of Nils Arne*
40 *Eggen [famous football coach], that he took from some Dutch Football coach. We just take a*
41 *lot of stuff that we like and merge it. (Co-founder 2, Freya)*
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44 Freya openly engaged with peers and was open to how other start-ups did things. For
45
46 example, the idea of “meeting-free Wednesdays” was an idea that Freya “stole” from a peer when
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48 that firm started experiencing problems, as the previous section notes. Moreover, Freya used
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50 routines and processes from the OKR (objective and key results) framework to coordinate team
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3 members. A practitioner management book³ describes the OKR framework, and multiple start-up
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5 communities have popularized it as the preferred organizing tool of Google and the Gates
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7 Foundation. Co-Founder 2 first heard about the framework from a peer who used OKRs to organize
8
9 his own start-up. Inspired by this, he introduced OKR to the rest of the start-up, moving swiftly
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11 from idea to implementation:
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15 *We met “Jon” (person outside the start-up) and got to know him, and he started talking about*
16 *OKRs (objective, key results), and I was hooked immediately! Based on his short explanation,*
17 *I felt sure that we had found what we needed and thought, “Now I have the system we need!”*
18 *What separates OKRs from other types of “management by objectives” is that it allows you to*
19 *reflect on your progress. It’s organized around collective reflection weekly. That reflection*
20 *allows you to stay focused on your effort. (Co-founder 2, Freya)*
21
22

23 Working according to OKR, each team member in Freya had one personal objective (goal)
24
25 and multiple key results (tasks to be done). Every week, the whole team met to evaluate the
26
27 progress of each member, identifying obstacles and dividing tasks to ensure efficient progress.
28
29 These meetings emerged as a key routine in Freya. In the meeting, all members would share their
30
31 progress concerning their objectives and key results, reporting whether their progress was “green,”
32
33 “yellow,” or “red” and giving everyone in Freya an overview of tasks and progress. The ability to
34
35 rely on vicarious learning through “stealing with pride” meant that Freya could plug in frameworks
36
37 to solve coordination problems. In this case, the OKR framework served as an important tool to
38
39 “jump start” the coordination process, providing a key routine, rule, and plan, and a way to measure
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41 progress.
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45 In contrast, Frigg also engaged in anticipation, but only the developer team “stole with
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47 pride.” Consequently, this team built more successful coordination mechanisms. However, the
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³ Doerr, J. (2018). Measure what matters: How Google, Bono, and the Gates Foundation rock the world with OKRs.
56 Penguin
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3 whole start-up did not share this approach. Other teams in Frigg did not instigate the “stealing”
4
5 practice. Instead, they often relied on intuitive and improvised solutions:
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8 *We wanted to improve the information flow between our teams so that the sales team could*
9 *better understand product development and vice versa. I suggested establishing a management*
10 *group to create a forum for members of all teams . . . Why a management group? To be honest,*
11 *I do not know. We did not consider any other options. We just established a management group.*
12 (Team member 8, Frigg)
13

14
15 Our findings indicate that members of Frigg found it difficult to “steal” practices and ways
16
17 of working from others. A team member noted:
18

19
20 *Our ideas for how to organize our work come from things we get exposed to naturally at work*
21 *and from things that people write on the internet. But our team has little work experience, so*
22 *we don't know too much about how things are done in other organizations. And what you find*
23 *on the internet does not always reflect how things actually work in reality.* (Team member 3,
24 Frigg)
25

26
27 Balder, another medium performer that demonstrated some anticipation, also engaged in
28
29 stealing with pride in their logistics team. The Logistics Lead, who had a positive view of formal
30
31 coordination, reflected: *“I really like it when objectives are clear and measurable, and I have been*
32 *suggesting that we should have a fixed weekly meeting for everyone in the firm.”* When introducing
33
34 routines and rules to the logistics team, he would draw on established best practices. For example,
35
36 they would “steal” Scrum in its textbook form, meaning that they introduced classic elements, such
37
38 as weekly reporting and visualization of progress. This helped the logistics team develop routines
39
40 and plans; for example, one team member (4) noted, *“It allows us to see opportunities and find*
41 *out whether anyone needs help”*. However, as in Frigg, the whole start-up did not share this
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43 approach; two other teams in Balder did not engage in stealing Scrum. Thus, the teams using
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45 different routines and rules limited Balder’s ability to coordinate across the start-up.
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52 Odin disregarded outside inspiration but initiated new coordination mechanisms through
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54 improvisation. With a negative attitude toward formal coordination (see section 1), Odin believed
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3 that relying on frameworks, especially those that others use, would hinder their creativity and
4 uniqueness. As such, they avoided introducing elaborate routines and frameworks like Scrum. As
5 one member of Odin summed it up, *“It’s easy to overcomplicate things. We have tried to move
6 ourselves in the opposite direction: to have as little structure as possible. Then, we add things
7 when needed. It’s about staying effective and keeping the pace up!”* (Team Member 1, Odin).
8 Hence, team members would coordinate their work through ongoing discussions rather than
9 established rules and plans: *“We don’t have planned (whiteboard) meetings. But we have a lot of
10 sporadic discussions, about cases and to clarify things. We discuss all day long. So, in a sense, the
11 whole day is a whiteboard meeting”* (Team member 3, Odin).
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24 Odin spent a substantial amount of time handling client cases but did not set out to find
25 best practices for the process. A team member described how they handled incoming tasks: *“We
26 have a company phone number, so if someone calls us, it’s directed toward our cell phones. That’s
27 how we assign client cases: It’s quite simply taken by the person who picks up the phone that day”*
28 (Team Member 2, Odin). While this improvisational approach provided some benefits—for
29 example, it helped Odin develop their complex digital platform—it also had drawbacks for
30 coordinating activities. For example, a couple of weeks into the data collection, Odin worked on
31 several big client cases for the first time. The first author noted that this severely stressed the
32 members. Yet, Odin had not prepared routines for managing the influx of big clients. One member
33 responded to a question about whether they had a way to prevent overload: *“No, because this
34 (multiple big client cases) has not happened before. It’s usually a steady stream of client cases,
35 but now it’s more than we can comfortably handle”* (Team Member 3, Odin).
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51 Overall, while the highest-performing start-up in our sample “stole with pride,” and medium-
52 level performers had parts of their start-up “stealing with pride,” lower-level performers would
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3 rely on their intuition when identifying possible coordination mechanisms. Therefore, vicarious
4
5 learning worked as an important precursor to emergent coordination because start-ups accessed
6
7 better mechanisms than they could develop on their own.
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10 Why would "stealing with pride" lead to more effective coordination? *First*, vicarious
11
12 learning allows start-ups to speed up development of coordination. Crucially, learning from
13
14 advisors and peers is often swift and cost-effective, requiring little time, money, and effort (Cohen
15
16 et al., 2019; McDonald & Eisenhardt, 2020). Similarly, we find that start-ups that learn vicariously
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18 develop coordination faster than those that do not. Increased speed is achieved because "stolen
19
20 frameworks" are more complete than those start-ups invent "on the fly," as OKR exemplifies.
21
22 *Second*, we find that vicarious learning provides not only speed but also crucial foundations for
23
24 start-ups to begin developing coordination at all. Vicarious learning allows start-ups to graft in
25
26 mechanisms they can use as a scaffold to set up ground rules for future experimentation. *Finally*,
27
28 recent research argues that peers serve as "treasure troves" of ideas and resources for start-ups
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30 (McDonald & Eisenhardt, 2020; 17; Ott & Eisenhardt, 2020), and the emergent-coordination
31
32 literature argues that individuals learn coordination by participating in communities of practice
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34 within their organization (Bechky, 2006). Integrating insights from these two literatures, we posit
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36 that peers around a start-up may serve as an external community of practice. We saw an example
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38 of this after our primary data collection. Freya developed new meeting rules by posting a survey
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40 on LinkedIn and reaching out to peers for input. After having developed the rules themselves,
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42 Freya then posted them and, thus, gave back to their community.
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49 **Experimental Implementation: How Start-ups Test and Scale Coordination Mechanisms** 50 **through Experimental Learning** 51

52 While "stealing ideas" helped start-ups identify coordination mechanisms, vicarious learning did
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54 not enable them to test and implement these mechanisms in their organization. The high-
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3 performing start-ups in our sample followed a rigorous process of *testing* new coordination
4 mechanisms through minimal and controlled rollouts in one part of the start-up; and then focusing
5 on *scaling* the mechanisms across the start-ups if they worked. This form of *experimental learning*
6 was important for embedding the right coordination mechanisms in daily activities. Table 7 shows
7 more information.
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16 INSERT TABLE 7 ABOUT HERE
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19 Freya would start with minimal rollouts within a few projects or teams when trying out new
20 coordination mechanisms and testing new ways of working. The second co-founder explained their
21 implementation process:
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25 *Co-founder 1 tested it (Scrum) with a small team first and learned from this initial test. As it*
26 *worked, we tested it in some more projects. And then, we started learning from each other.*
27 *When our marketing team started using it, they did it slightly differently. It worked, so we*
28 *copied them. That's how we work with build-measure-learn, not just when developing our*
29 *product but also our organization. (Co-founder 2, Freya)*
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31

32 In other words, the founders in Freya outlined a process by which they would first test a new
33 coordination mechanism in a controlled setting (one team) and learn from it. Then, if the new
34 mechanism seemed to work, they would scale it to the other teams. The first co-founder explained
35 how this experimental process allowed them to learn:
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41 *So, the reason that we scaled up Scrum was threefold. First, I learned about the method*
42 *when working with our developers, and I liked it. Second, I found that we had to be more*
43 *similar in how we engaged in project management. Finally, I sensed a lack of autonomy*
44 *among some team members. My hypothesis was that we had a management problem.*
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47 Importantly, Freya would involve all members in *scaling* useful coordination mechanisms.
48 They set up a Trello board (a Kanban-style list-making app), so everyone could chime in to
49 approve or disapprove the change. Then, the founders would focus on "*implementing the hell*" (as
50 they put it) out of the mechanisms. This was important because new coordination mechanisms did
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3 not just work from Day One. Even the frameworks that Freya “stole,” such as OKR, took time to
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5 put in place and become routine. As one member noted, “*OKR has improved a lot. And that takes*
6
7 *time; when you start to work differently, you have to learn how it’s done. With OKR, you need to*
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9 *reflect on the process and to sit down and actually follow the steps properly*” (Team member 1,
10
11 Freya).

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13
14 To further ensure the *scaling* of coordination mechanisms, Freya designated a member to
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16 be responsible for ensuring that other members followed the experimental implementation process.
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18 This member was referred to as the “shepherd”; for OKR, the “shepherd” was the second co-
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20 founder:
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24 *As the team’s Shepherd, I own and push the implementation process. Yesterday, some*
25 *personal reports were lacking, then I messaged everyone so that it’s done. I spend a lot of*
26 *my time making sure that everyone has a shared understanding of what we are doing.*
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29 Thus, Freya set up a stepwise form of implementation that allowed for a deliberately controlled
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31 experiment, such as trying a coordination mechanism out in one small team and then learning from
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33 it, before *scaling* the mechanism across the start-up by involving all members. As designated
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35 leader, a “shepherd” was responsible for the overall implementation.
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38 Frigg showed hints of a similar process. For example, Frigg’s development team tested
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40 multiple software-development frameworks⁴ before deciding on one to scale up:
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43 *We considered multiple frameworks, so we thought we'd have to evaluate all these frameworks*
44 *before we decide. So we listed all of them, made some criteria, and evaluated them quickly.*
45 *Then we were left with three. We tested those three to further evaluate performance, speed, and*
46 *so on, before deciding on the one we now use.* (Team member 6, Frigg)
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49 Furthermore, the developer team in Frigg would learn from these experiments. The team
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51 reflected on new ways of working in a biweekly sprint review meeting, where members would
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55 _____
56 ⁴ These frameworks included the software development tools *Svelte*, *React* and *Vue*, which are used to coordinate
57 software development.
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3 “evaluate our progress, asking ourselves whether we are progressing according to our goals”
4 (Team member 4, Frigg). However, Frigg had mixed overall results for implementing new ways
5 of working. While Frigg’s developer team successfully implemented several coordination
6 mechanisms, the start-up as a whole—including the sales and marketing team—struggled to make
7 changes in their routines stick. A marketing manager reflected on their attempt to introduce weekly
8 status meetings, stating, “Yes, we started to have those weekly meetings. But that just does not
9 happen anymore. We have not managed to systematize our meetings. That is something we need
10 to get on with again!” (Manager 2, Frigg). Our findings reveal a lack of alignment between the
11 different teams in Frigg as the reason they struggled to implement mechanisms as efficiently as
12 Freya. As Frigg grew from 7 to 14 members, they split up into different teams but lacked
13 alignment: “Now, the developer team and the sales team are not completely aligned. We should
14 be one unit, not two independent groups” (Team member 8, Frigg). As such, Frigg’s
15 implementation processes lacked a crucial step; they could not collectively learn from one team’s
16 experiment and did not engage in *scaling* coordination mechanisms with all start-up members
17 involved, as Freya had.

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38 We found that Balder struggled with the same issue as Frigg. While managing to implement
39 sprint reviews in the logistics teams, the learning did not transfer to the rest of the start-up. Hence,
40 the *scaling* that we saw in Freya was also lacking here. The Logistics Lead, who had initiated the
41 experimentation with sprint reviews, lamented, “We don’t have a culture for experimentation and
42 testing. That annoys me.” On the other side of the start-up, the design team felt excluded from the
43 Logistics Lead’s experimentation with the meetings. “Yes, the Logistics Lead runs stand-up
44 meetings with his team, but the rest of the group and I are not involved” (Manager 3, Frigg). The
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3 result showed that although the Logistics Lead successfully experimented and implemented well-
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5 functioning meetings in his team, the practice did not spread.
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8 We found that Frigg and Balder *replicated* Freya's way of implementing new coordination
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10 mechanisms, through a deliberate experimental process. Yet, our findings also reveal an important
11
12 point of *deviation*. Once they learned that it worked in one team or project, Freya managed to scale
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14 coordination mechanisms across the start-up. In contrast, Frigg and Balder mostly failed to do so.
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16 It was surprising how hard it was for the start-ups to scale coordination mechanisms. Studies find
17
18 that it is possible to diffuse coordination mechanisms through very informal means, such as joking
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20 (Becky, 2006). Yet, we found that start-ups must be much more diligent in this regard. For
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22 example, Freya designated one person (the "shepherd") to ensure implementation of mechanisms.
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27 Curiously, Odin had some success in implementing its improvised coordination
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29 mechanisms. Odin would make smaller changes in their ways of working continuously. For
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31 example, as the start-up struggled with coordination between its operations team and its off-site
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33 developers, it adapted how the two teams communicated. One individual on the operations team
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35 explained how: "*Early on, everyone (in the operations team) called the developers and asked them*
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37 *to do this or that, and then they just worked 24/7 for two days until they collapsed*" (Team member
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39 *2, Odin*). Odin quickly "*realized that we can't really work like that*" and made changes
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41 accordingly.
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46 A key example of how Odin managed to experimentally implement new coordination
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48 mechanisms was how they developed their client routine. Here, they moved through iterations of
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50 doing client work in an improvised fashion, to implementing a "checklist," a standard routine for
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52 working with clients that improved coordination. A team member described this evolution:
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55 *In the beginning, we were just running in circles and standing on our heads; it was chaotic.*
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57 *But as demand for our product has gone up, we have become more effective. We are now*
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3 *more uniform in the way we deal with clients. Yesterday, we discussed how we could*
4 *standardize how we onboard clients, and we aim to automate the process. We get more*
5 *effective over time. (Team member 1, Odin)*
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7
8 Our findings show that Odin could move from pure improvisation and skepticism toward
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10 structures, to developing a standard routine over time, which they accomplished by learning
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12 through *testing*, then *general scaling* across the start-up. Another team member explained the
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14 process with the “checklist”:
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17 *We made this tool from scratch, based on our own specific needs. It’s an overview of all our*
18 *cases, and with color codes, as needed. We use this as a checklist, and developing it has*
19 *been a learning process. We often experience that something is lacking, and then we note*
20 *that down and say, “We need to get this right next time.” And then we improve our checklists*
21 *based on that. (Team member 3, Odin)*
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24 Thus, while Odin *deviated* from Freya regarding anticipatory and vicarious learning, they
25
26 *replicated* Freya’s implementation of the coordination mechanisms. The main difference in results
27
28 was that Freya’s process was faster and smoother, while Odin’s process took longer because Odin
29
30 would only learn from their own mistakes. Lacking anticipation and “stealing,” Odin would
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32 initially “run around in circles,” as one member put it. Only when they took a more structured
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34 approach that they could successfully implement well-functioning coordination mechanisms, such
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36 as the checklist for handling clients. Using experimental learning when implementing coordination
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38 mechanisms helped the start-ups successfully embed mechanisms in daily work.
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42 Why would experimental implementation, comprising testing and scaling, allow
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44 coordination to emerge? *First*, experimental learning allows start-ups to validate external
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46 knowledge at low cost and risk. While learning from outsiders allows for broad search (Cohen et
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48 al., 2019) and “accelerated progress toward rough prototypes” (McDonald & Eisenhardt, 2020), it
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50 is often hard for start-ups to validate the value of external knowledge in their particular case (Cohen
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52 et al., 2019). Testing new coordination mechanisms through minimal rollouts allows start-ups to
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3 assess the value of “stolen” frameworks with little risk and effort. *Second*, we found that when
4 start-ups did not take a deliberate experimental approach to implementing coordination, it was
5 often very hard to make coordination mechanisms widespread and permanent. A key reason for
6 this is that the mechanisms are new and not yet proven, unlike the mature mechanisms in
7 established firms (e.g. Bechky, 2006). Decision-makers therefore must convince other members
8 of a mechanism’s worth, and they can do so through experimenting. Testing a new coordination
9 mechanism and finding it works serves as a “proof of concept,” convincing members of its value.

19 **Combine and Simplify: How Start-ups adjust Coordination Mechanisms through Trial-and-** 20 **Error Learning**

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22 So far, we have outlined how start-ups anticipate coordination needs, identify coordination
23 mechanisms, and test and implement them. However, as they added new coordination
24 mechanisms, start-ups also had to avoid over-formalization and rigidity. We found that the highest
25 performers could avoid this through unplanned *trial-and-error learning*, leading them to *combine*
26 different mechanisms to fit specific needs and *simplify* coordination mechanisms over time. While
27 experimental implementation describes how start-ups tested and scaled new coordination
28 mechanisms, *combine and simplify* describes how start-ups used trial-and-error learning to
29 optimize coordination mechanisms and avoid rigidity. Table 8 outlines this in more detail.
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42 INSERT TABLE 8 ABOUT HERE
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46 Initially, Freya had organized mainly according to the OKR framework. However, as the
47 organization scaled, multiple team members had trouble breaking their objectives down into
48 concrete tasks. Hence, project managers spent a substantial amount of their time micro-managing
49 team members. Reflecting on their challenges, the first co-founder stated, “*When all project*
50 *members depend on one person in the project (project manager) to know what to do next, things*
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3 *become challenging. Then the leader has to micromanage, and team members lose autonomy.”*

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5 Freya noted this problem and realized that OKR was too high-level and abstract. They noticed that
6
7 the Scrum framework, which they had also started to use, was too detailed. Relying too much on
8
9 Scrum led to a “hamster wheel” (Co-founder 2, Freya), where team members just solved tasks
10
11 without a strategic overview. Hence, they arrived at the idea of combining them, getting the best
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13 of both worlds with the strategic overview from OKR and the hands-on from Scrum. The first co-
14
15 founder explained:
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19 *OKR is used as a project management tool by other firms, but that does not seem to work for*
20 *us . . . OKR will still be important for us going forward, as a strategic tool that everyone*
21 *appreciates. However, to complement a strategic tool, you need a tactical tool. For us, that*
22 *tactical tool will be Scrum . . . This way of combining OKRs and Scrum is our own idea. We*
23 *have been trying to find other organizations that combine the two but have not found anyone*
24 *yet. Many people use OKRs, and many use Scrum. But the combination may be unique.*
25
26

27 Freya also simplified the frameworks that they had implemented, the result of learning more about
28
29 the frameworks “in practice” and realizing errors they caused. For example, one team member
30
31 described how the OKR framework initially did not work that well but improved over time:
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33

34 *The OKR framework gave very little, initially. It took many iterations, where we constantly*
35 *learn what works and what could be more effective. It is a learning process for all. In the*
36 *beginning, everybody was repulsed by OKR and thought it was some kind of checklist. Back*
37 *then, we did not understand what it was, so everybody just automatically made a list. That was*
38 *not the intent at all.” (Team member 1, Freya)*
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41 Instead of just using Scrum and OKR as standard frameworks, Freya took care to improve
42
43 the frameworks themselves, as one of the co-founders noted: “*You can never simplify things*
44 *enough, that is something we have learned over time . . . we take things and simplify them all the*
45 *time” (Co-founder 2, Freya).* For example, Freya noted that the OKR framework was too complex
46
47 and did not “solve all problems,” as they had initially thought it would. Hence, Freya simplified
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49 OKR to their needs, by reducing the number of goals for completion every quarter. Moreover, they
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51 also optimized the OKR cycles from one month to three when they realized that one-month cycles
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3 encompassed too much administration. The determination to simplify allowed Freya to avoid
4 becoming too formal and bureaucratic. Instead, they could stipulate the necessary rules, plans, and
5 routines that they needed while continuously cutting out elements and ideas that harmed everyday
6 work.
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12 We noted that the two other medium performers in our sample—Frigg and Odin—combined
13 and simplified, which helped them improve coordination mechanisms over time. For example, we
14 noted that Odin *simplified* their client routine – implemented in the previous step, by identifying
15 and fixing issues continuously. One team member explained:
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21 *Team member 2 just mentioned that it may not be necessary to show up with two people*
22 *from our team when we meet with clients. So we just thought: ‘That’s true—why would we*
23 *need more people?’ We are more uniform now in how we work with our clients.” (Team*
24 *member 1, Odin)*
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26

27 As the quote illustrates, Odin adapted their client routine toward simplicity, by reducing
28 the number of people from the team in client meetings. Moreover, they would also remove
29 superfluous steps in this routine, to further reduce complexity and errors. The result was that Odin
30 could maintain the organization’s pace.
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36 The developer team in Frigg *combined* multiple coordination mechanisms. The developers
37 implemented agile sprints but struggled to prioritize tasks, experiencing the same “hamster wheel”
38 as Freya did. Therefore, they integrated a focus on the goals of the start-up in sprint planning
39 meetings, to be more deliberate in their effort. The IT lead (Team member 3) explained how they
40 had become aware of the lack of prioritization and then acted upon it:
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48 *We became aware of the problem during a sprint review meeting. We asked why our progress*
49 *was lacking and noticed that people worked on tasks that were really not the most important.*
50 *That is why we started to pay attention to our goals. Now we rank all tasks, and people*
51 *should always work on the most important one. It’s really important that we agree on what’s*
52 *more important.*
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3 Combining agile sprints with a focus on strategic start-up priorities helped the developers become
4 more deliberate, but they eventually discovered another problem. The IT lead noticed that the
5
6 more deliberate, but they eventually discovered another problem. The IT lead noticed that the
7
8 developers on his team struggled to align their way of working with the rest of the start-up: “. . .
9
10 *the business and marketing people have their ideas on how the product should look, feel, and*
11
12 *function. Right now, we have not been able to align development, design, and the functionality that*
13
14 *our clients want.”* Thus, while we found two of the medium performers able to act and correct
15
16 mistakes in coordination as they gained experience with different mechanisms, we also noted that
17
18 they were not as capable of combining or simplifying mechanisms in whole of their organization
19
20 as Freya. This was a lesser problem in Odin, with its simpler improvised mechanisms with; Frigg
21
22 had issues with too much complexity and lack of alignment.
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26 Balder did not manage to combine and simplify coordination mechanisms despite working
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28 with Scrum, like Freya. This had negative consequences when Balder ran into the same issues as
29
30 Freya, with Scrum being too detailed and hindering a strategic overview.
31
32

33 *There are many things where we have to work with each other (across teams), and it is*
34 *somewhat important to create—you know—plans, calendars, and all that . . . But at one*
35 *stage I had to drop it; we also had the to-do list that Manager 2 had created, and I had to*
36 *put all my tasks there. But then I get lost. Now, everyone has come up with their own*
37 *organizing system. (Team Member 2, Balder)*
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40 Our analysis highlighted the lack of combining and simplifying that inhibited the optimization of
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42 coordination mechanisms. Eventually, that lack in Balder led members to abandon the use of a
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44 joint organizing system; instead, members tended to rely on individual ways of working.
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47 Overall, trial-and-error learning was an important element in securing emergent
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49 coordination. By combining coordination mechanisms, start-ups would fit “stolen” mechanisms to
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51 their specific needs. By simplifying coordination mechanisms, they avoided rigidity.
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3 Why would combining and simplifying enable effective coordination? *First*, combining
4 coordination mechanisms allows start-ups to optimize “stolen” routines and plans over time. While
5 Freya jump-started coordination by identifying and implementing established frameworks, they
6 also experienced shortcomings and issues with these frameworks. While vicarious and
7 experimental learning may allow organizations to identify and implement “good enough”—but
8 not optimal—solutions (McDonald & Eisenhardt, 2020), ongoing trial-and-error learning may
9 allow them to fit “stolen” coordination mechanisms to their specific needs. *Second*, simplifying
10 coordination mechanisms can help start-ups avoid over-formalization and bureaucracy. For
11 example, Freya, Frigg, and Odin could reduce the number of meetings they had and the complexity
12 in their routines. Consistent with prior research, we find that simplification is important for
13 learning because it allows organizations to shed and replace obsolete practices (Bingham &
14 Eisenhardt, 2011). Simplification may also crystalize learning and make coordination mechanisms
15 easier to use for startup members. We find that this is a crucial element because when members
16 cannot follow the mechanisms, they may abandon them, which happened inside Balder. *Third*,
17 when organizations have elaborate and complex coordination mechanisms, these mechanisms may
18 become inert and hinder organizations in adapting to new situations (Schakel et al., 2016). As start-
19 ups must adapt to an uncertain future and dynamic markets, the ability to combine mechanisms
20 and reduce complexity is crucial.

21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 **HOW STARTUPS DEVELOP COORDINATION THROUGH LEARNING** 46 **SEQUENCING: A NEW THEORETICAL FRAMEWORK** 47

48 We started this study curious to understand how start-ups develop and improve coordination in
49 dynamic environments, lacking elaborate routines or other foundations upon which to build. Based
50 on our analysis, we present a theoretical framework outlining how start-ups learn to coordinate
51 and secure ongoing coordination. Our core insight is that start-ups learn to do so through a
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3 sequence of *anticipating coordination (anticipatory learning)*, *stealing with pride (vicarious*
4 *learning)*, *experimental implementation (experimental learning)*, and *combining and simplifying*
5 *(trial-and-error learning)*. We present this theoretical framework in Figure 1.
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11 INSERT FIGURE 1 ABOUT HERE
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14
15 First, start-ups that develop successful coordination anticipate the need for coordination
16 and see it as a prerequisite for scaling. Such start-ups can pre-empt coordination crises that might
17 emerge as they scale and change—for instance, when they onboard new members. In contrast,
18 when start-ups do not value structure and rely on improvised solutions, they are slower to develop
19 coordination and, therefore, struggle with coordination problems. Essentially, using anticipatory
20 learning to develop coordination is important because start-ups foresee problems and become
21 motivated to set up routines and rules.
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31 Second, start-ups that develop successful coordination “steal” ideas and frameworks from
32 peers. Such vicarious learning serves to “jump-start” the coordination process, by providing
33 scaffolds that start-ups can use and with which they can experiment. This is consistent with
34 research that shows how vicarious learning increases speed (McDonald & Eisenhardt, 2020) and
35 allows start-ups to avoid common mistakes (Cohen et al., 2019). Yet, with respect to coordination,
36 vicarious learning may be even more important because it provides readymade frameworks that
37 start-ups otherwise would not have. Essentially, using vicarious learning to develop coordination
38 is important because start-ups ‘steal’ routines, rules and plans that are more developed compared
39 to what they develop on their own.
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52 Third, successful start-ups implement and scale coordination mechanisms through
53 experimental learning. These start-ups reduce uncertainty and convince members of a
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3 mechanism's worth (c.f. McDonald & Eisenhardt, 2020). Surprisingly, we find that even though
4 the start-ups we studied were rather small, it was difficult for them to implement coordination
5 across their organization. Experimenting was crucial for decision-makers and members to gain
6 trust in new mechanisms, easing overall implementation considerably. Essentially, using
7 experimental learning to develop coordination is important because start-ups learn what
8 mechanisms work for them and convince the whole team to accept new mechanisms.
9

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11 Finally, start-ups that develop successful coordination combine and simplify coordination
12 mechanisms over time. This trial-and-error learning is important because "stolen" frameworks
13 might not be a complete fit for a start-up (c.f. Bingham & Davis, 2012). Hence, they need to
14 "customize" them to their own situation. Essentially, using trial and error learning to develop
15 coordination allow start-ups to learn of problems with their current coordination mechanisms, such
16 as excess complexity, and then solve these problems by combining and simplifying mechanisms.
17

18
19 In line with previous research, we find that a broad learning repertoire is important for start-
20 ups' development (Bingham & Davis, 2012; McDonald & Eisenhardt, 2020; Ott & Eisenhardt,
21 2020). For example, we find that experimental implementation is useful for embedding
22 mechanisms in daily activities, while trial-and-error learning is useful because it allows start-ups
23 to correct problems occurring after implementation and avoid bureaucracy.
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26 Essentially, our findings suggests that each learning style has a unique contribution towards
27 start-ups ability to develop coordination. We also find that learning styles feed into each other. For
28 example, anticipatory learning can motivate vicarious learning, a search for better ways of
29 coordinating. Similarly, vicarious learning can inspire experimental learning by providing
30 frameworks that start-ups can try out. Thus, our framework suggests that start-ups use multiple
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3 learning styles not only because they together produce the best outcome, but because learning
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5 styles promote each other.
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8 While start-ups can successfully develop coordination mechanisms through this sequence,
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10 we argue that at some crucial junctures, they will have to restart the sequence. This happens when
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12 they reach a point where previously installed mechanisms become insufficient, even as the start-
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14 ups seek to adjust them. We saw this happening as Freya grew to 28 members and was rapidly
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16 expanding to new markets. As they did so, they again anticipated the need for new coordination
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18 mechanisms, as they became a much larger and fast-growing organization⁵.
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22 Overall, our framework provides several new insights. Most importantly, it provides new
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24 theory on how start-ups develop coordination, currently poorly understood (Burton et al., 2019;
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26 Desantola & Gulati, 2017; Jung et al., 2017; Patzelt et al., 2020). Additionally, our framework
27
28 provides new insights into the emergent coordination and organizational learning literatures.
29
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31 **DISCUSSION**

32 **A Theoretical Framework of How Coordination Emerges and Develops in Start-ups**

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34 By unpacking how start-ups learn to coordinate, our framework adds to the literature on start-up
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36 coordination (Baron et al., 2001; Burton et al., 2019; Klotz et al., 2014; Jung et al., 2017; Sine et
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38 al., 2006). *First*, our paper seeks to change conventional wisdom of coordination in start-ups.
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40 While some prior research suggests that start-ups need coordination, usually in the form of
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42 hierarchical levels and roles (Davis et al., 2009; Lee, 2022; Sine et al., 2006), many scholars and
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44 practitioners offer a ‘romanticized’ view of coordination in start-ups, arguing that hierarchy and
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46 formal structures hinder start-ups in experimenting and adapting (Burton et al., 2019; 3; Lee, 2022;
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48 59). An implication of the latter view is that coordination should be avoided for as long as possible,
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50 usually until the start-up grows too big for people to work ‘shoulder to shoulder’, and when
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56 ⁵ At time of writing, Freya was recruiting for 11 open positions.
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3 stakeholders demand that the start-up installs professional management (Burton et al., 2019;
4 Desantola et al., 2022; Eisenmann, 2021; Lee, 2022; 59). In contrast, we find that even small, new
5 start-ups need to develop coordination. Bar our high performer, all the other start-ups suffered
6 some sort of coordination issues, ranging from deep crisis, to having issues coordinating across
7 different teams. These issues arose already in start-ups of 4-8 persons. Our high performer solved
8 such issues by proactively setting up coordination very early. As such, we show that coordination
9 mechanisms are necessary even for small start-ups, and that they should be encouraged to develop
10 them. Doing so, we hope to dispel the myth that start-ups should be unstructured (c.f. Burton et
11 al., 2019;3). Moreover, we show that coordination need not consist only of hierarchical levels and
12 roles (c.f. Lee, 2022), but that start-ups can coordinate through flexible routines, rules and plans,
13 which do not hamper adaptability, but help foster it.
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28 *Second*, we highlight the agency of founders and start-up members in developing
29 coordination, by revealing the process by which they install and improve coordination mechanisms.
30 In most prior work, the agency of founders takes a backseat to institutional explanations. Scholars
31 argue that coordination is the result of institutionalized ideas for how ventures should be organized,
32 enforced by key stakeholders (Aldrich & Ruef, 2018; Desantola & Gulati, 2017; 645-646). In
33 contrast, we show how start-up members realize problems with routines, roles, rules and plans,
34 and take active steps to fix them. The agency of founders and members are thus front and center
35 in our framework, whereas stakeholders do not play a lead role, mainly because the start-ups are
36 so small that investors do not think of formal structures yet. In this regard, our framework
37 resembles the literature on start-up blueprints, which argues that founders ‘hardwire’ models of
38 coordination at founding (Baron & Hannan, 2002; Baron et al., 2001). Yet, by focusing on learning
39 processes rather than founder traits, our findings challenge core ideas in this literature. For example,
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3 whereas Baron et al., (2001; 965) pose that founders install blueprints based on their own personal
4 ideas, we show how that founders may to large degree steal mechanisms. Then, we also show that
5 founders may abandon parts of a framework when it does not work anymore. In other words,
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7 founders - who are good at setting up coordination - may not be as rigid in their mindset as the
8 blueprint idea portrays them to be. Finally, the blueprint idea leaves little room for other members
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10 in shaping coordination. But we show that team members play a large role in setting up and
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12 improving coordination. Thus, we encourage future research to move away from the notion that
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14 founders alone determine coordination.
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21 Overall, the *core contribution* of our paper is a new story of how coordination emerges in
22 start-ups, which coordination mechanisms start-ups use, and why it matters. Rather than being
23 chains foisted upon free-spirited entrepreneurs when they reach critical mass and stakeholder
24 attention, we show how developing flexible coordination mechanisms is a key ingredient for start-
25 up success, even very early on. We also provide a process model that show how start-ups can
26 successfully develop coordination, thus allowing practitioners not only to realize the need for
27 coordination but also implement it.
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37 **Elaborating on the Role of Learning in Emergent Coordination**

38 We also extend the emergent coordination literature by unpacking how start-ups develop
39 coordination mechanisms. *First*, we show how coordination can emerge in organizations that lack
40 pre-established rules, routines, and roles. The emergent coordination literature focuses on scaffolds
41 embedded in organizations and industries, such the institutionalized roles that film crew employ
42 (Bechky, 2006), as the root of emergent coordination. In contrast, we show how learning serves as
43 a precursor of emergent coordination in start-ups.
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53 While the emergent coordination literature subtly outlines unintentional learning styles,
54 such as how SWAT teams engage in trial-and-error learning after missions (Bechky & Okhuysen,
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3 2011; 252), we pose that because start-ups lack existing scaffolds, they need to be much more
4 deliberate in how they learn. Start-ups cannot rely on ingrained routines to cover gaps or solve
5 unexpected problems. Instead, they must anticipate problems, find possible coordination
6 mechanisms, and ensure that these mechanisms work. Thus, learning is a much more fundamental
7 element than previously conceptualized in the emergent coordination literature. Understanding
8 how organizations learn coordination adds to our knowledge on emergent coordination, as it allows
9 us to understand how coordination emerges in organizations before they reach a mature state where
10 institutionalized rules, routines, and plans are present. Thereby, we can understand emergent
11 coordination in new and emerging organizations and not just in organizations where coordination
12 mechanisms already exist.

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26 *Second*, we unpack how different learning styles contribute individually to the emergence
27 of coordination. For example, we show that vicarious learning plays an important role in allowing
28 start-ups to import coordination mechanisms. Otherwise, start-ups may struggle to find useful
29 mechanisms. We also show that experimental learning is crucial for implementing mechanisms
30 widely. Surprisingly, we find that small start-ups struggle to diffuse mechanisms if they do not
31 deliberately test them first. This contrasts with prior work that assumes mechanisms will spread
32 through informal interactions (Bechky, 2006). *Finally*, we show that organizations can improve
33 existing mechanisms through trial-and-error learning, allowing them to combine and simplify
34 mechanisms. Thus, we extend prior work from focusing on wholesale replacement of coordination
35 mechanisms (Jarzabkowski et al., 2012), to developing coordination to better fit the organization
36 as it grows and changes.

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51 Overall, while the emergent coordination literature explains how coordination emerges as
52 actors use existing scaffolds, our study explains how coordination emerges from an embryonic
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3 stage through the synergy of different learning styles, providing a better understanding of emergent
4 coordination. Rather than seeing it as something that emerges from institutionalized scaffolds
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6 (Bechky, 2006; Valentine & Edmondson, 2015), we can see it as a state that is reached through
7
8 learning.
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12 **How Learning Styles Interact in Learning Sequences**

14 Finally, our study adds to research on how different organizational learning styles interact with
15 each other (Bingham & Davis, 2012; McDonald & Eisenhardt, 2020; Miner et al., 2001; Ott &
16 Eisenhardt, 2020). Prior research shows the shortcomings of both indirect and direct learning
17 styles. Bingham and Davis (2012: 627) note that the direct learning styles of experimental learning
18 and trial-and-error learning are “*time consuming, resource intensive, and not very efficient,*” while
19 Cohen et al., (2019) argue that indirect vicarious learning is a challenge because it is difficult to
20 assess the trustworthiness and applicability of external information. We find that successful start-
21 ups address shortcomings in each learning style by combining them. Vicarious learning makes
22 experimental learning less time-consuming and resource-intensive because it sets up testing of
23 proven coordination mechanisms that are likely to work. The combination also makes vicarious
24 learning less risky because “stolen” coordination mechanisms are tested in a single project team,
25 and only scales them up if they work. Prior work demonstrates the value of a broad learning
26 repertoire (Bingham & Davis, 2012; McDonald & Eisenhardt, 2020), but these studies do not
27 explicitly show how one learning style compensates for shortcomings in another. Also, McDonald
28 and Eisenhardt (2020) perceive vicarious learning as a shortcut that increases speed. Extending
29 this work, we find that vicarious learning also works as a foundation that sets the rest of the
30 learning sequence in motion as it inspires experimental learning.
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53 Moreover, previous research does not explain why some start-ups choose to steal ideas
54 from peers and others do not. We find that anticipatory learning serves an unrecognized key role
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3 (Bingham & Kahl, 2014), allowing firms to identify problems that they may later solve through
4 vicarious and direct learning. Specifically, when start-ups identify problems before they escalate,
5 they have time to engage in vicarious learning and reflection to solve those problems. Thereby,
6 anticipatory learning may keep start-ups from digressing to improvisational learning. A major
7 reason why improvisational learning may drive out other learning styles is due to time pressure
8 and unforeseen events (Miner et al., 2001). The combination of anticipatory learning and vicarious
9 learning we identify may also increase the efficiency of vicarious learning; when the start-ups first
10 anticipate and discuss problems, vicarious learning is more likely to target issues of importance.
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22 Overall, our study adds to the growing notion that a broad learning repertoire is
23 advantageous for organizations (Bingham & Davis, 2012; McDonald & Eisenhardt, 2020; Ott &
24 Eisenhardt, 2020). While this literature shows how combining learning styles leads to better
25 performance, such as more complete and competitive business models (McDonald & Eisenhardt,
26 2020), we add by highlighting the tight linkages between learning styles. Not only are learning
27 styles complementary in terms of creating performance; they may even serve as *antecedents to*
28 *each other*. For example, anticipatory learning serves as an antecedent to vicarious learning, and
29 vicarious learning serves as an antecedent to experimental learning. Thus, learning sequences may
30 be path dependent. As such, it is crucial to understand the linkages between learning styles and not
31 just their isolated performance outcomes.
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44 **Alternative explanations**

45 Our findings suggest a link between learning styles and coordination, and between coordination
46 and start-up performance. However, there may be alternative explanations for the success of Freya
47 compared to the other start-ups in our sample. One alternative explanation could be that Freya's
48 market was less volatile than those of the other start-ups, giving it more time and space to build up
49 coordination mechanisms. We cannot rule out that explanation because we focused our sampling
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3 on internal characteristics and not industry, we do find it unlikely because Freya and three other
4 start-ups in our sample developed digital platforms as their business model. Another alternative
5 explanation is that developing coordination is based on start-up team formation from inception.
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7 Lazar et al. (2021) propose that setting up the right team with the right skills and interpersonal
8 connections in the beginning allows start-ups to coordinate like an “orchestra,” where team
9 members synergize to achieve synthesis. While it is likely imperative to hire good team members
10 in the beginning, this explanation does not really fit our high performers, which mostly hired
11 inexperienced students whom they had to train and socialize into the start-up. Hence, our study
12 readily reveals that to become a well-oiled orchestra—to borrow Lazar and colleagues’ (2021)
13 metaphor—it is crucial to deliberately develop and improve coordination mechanisms. A final
14 alternative explanation is that the characteristics of the founders, in particular prior start-up
15 experience, influence coordination (c.f. Klotz et al., 2014). Yet, we also find this explanation
16 unlikely because Freya’s founders did not have prior entrepreneurial experience. Overall, we do
17 not find a link between experience and coordination outcomes. Our medium performers had
18 similar outcomes but large variations in experience. Furthermore, founder characteristics may be
19 an *antecedent* to the learning sequence we identify, rather than an alternative explanation. While
20 it is possible that the background and traits of Freya’s founders, such as their shared background
21 in the military, led them to engage in their sequence, it was still the sequence that produced the
22 outcomes and not the traits and background. Thus, we pose it is more relevant to understand the
23 behavior of Freya’s founders rather than their underlying traits, which may or may not affect their
24 entrepreneurial behavior (c.f. Gartner, 1988). Finally, inductive multiple case studies are limited
25 in their knowledge claims, especially in terms of performance outcomes. Therefore, we encourage
26 future research to test whether our findings replicate in a larger population of start-ups.
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Future research

As an inductive study aiming to research into a phenomenon that is currently not well understood, our study has limitations that could be alleviated by future research. *First*, future research may explore whether the learning styles are additive and sequential, as our framework suggest, or merely additive. For example, can start-ups use these learning styles in an alternative order and gain the same effect? Currently, literature on learning sequencing state that order matters (Bingham & Davis, 2012; McDonald & Eisenhardt, 2020). But larger scale, quantitative research, is lacking in testing these claims. *Second*, future research may also investigate how specific learning styles contribute to the different aspects of coordination in more detail. For example, do start-ups learn roles, routines, rules and plans through vicarious learning, or perhaps only routines and rules and plans? Such research could deepen our understanding of how organizations develop new or disrupt old coordination patterns. *Third*, future research should investigate how start-ups restart their learning sequences and continue to develop coordination as they scale. While Freya re-started the learning sequence later in the data collection, the other start-ups did not, limiting our ability to theorize around iterative learning sequences. *Fourth*, we do not cover how start-ups recover from coordination crises. In our low-performer, the developing coordination crisis was fatal, but one of the medium-performers, Odin, managed to solve many of their coordination problems by changing learning styles. Yet, our data is limited with respect to how start-ups recover from coordination crises. As many start-ups may find themselves struggling with coordination (Lee, 2022), a better understanding of how they recover from coordination crises would be of practical importance.

CONCLUSION

As start-ups navigate uncertain and demanding environments, they must continuously update the way their organization functions. Based on an in-depth multiple-case study following five start-

ups over 22 months, we provide a process model of how they develop and improve coordination mechanisms. Our findings and model show that start-ups that blend different learning styles when developing coordination outperform other start-ups. Our model has practical implications for how start-ups should be managed, and it provides clear advice for entrepreneurs. Start-ups should not fear having clear roles, rules, plans, and routines; they should deliberately seek to implement them. Moreover, they should learn from their peers and continuously combine and simplify with roles, rules, plans, and routines, to fit them to their current situation.

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Table 1: Case overview and data collection

Case	Product and business model	Year founded	Founders	Team Size at start and end of data collection	Participant observation	1st round of interviews	2nd round of interviews	Follow-up interviews	Additional data
Freya	Freya developed a platform for book sales between private individuals. The platform integrated a payment solution and sending of books	2016	3 founders (Co-founder 1 and 2. Third founder left before data collection) Experience: Leadership education from officer training in the army and non-founding start-up experience. Co-founder 1 held a graduate degree in finance Average age: 32	6 (start) 28 (end)	10 visits, 41 hours over 1.5 year	8 interviews - Co-founder 1 - Co-founder 2 - 6 Team members	10 interviews - Co-founder 1 - Co-founder 2 - 8 Team members	6 interviews - Co-founder 1 - Co-founder 2 - 4 team members	- 2 archival documents (press release, newspaper articles, podcast interviews) on how Freya acquired a total of 7M USD in funding - 3 archival documents documenting user growth (150 000 user in 2020) and sales (1.5 M USD in sales in 2020) - 3 archival documents where Freya received media attention for their “project management approach”
Odin	Odin developed a platform for crowdfunding for small and medium sized firms. The platform allowed private individuals to invest in firms not listed on the stock exchange	2017	2 founders (Founder 1 and a board-member) Experience: Serial entrepreneurs with higher education. Average age: 40	4 (start (end)	10 visits, 64,5 hours over 1.5 year	4 interviews - Founder 1 - 3 team members	6 interviews - Founder 1 - Team member 1 (x2) - Team member 2 (x2) - Team member 3	5 interviews - Manager 2 (x2) - 3 team members	- 1 archival document on how Odin received a award as best local digital marketplace start-up in 2019 - 3 archival documents describing how Odin doubled number of users in 2020 (10 000 users in 2020) and increased its revenue (1M USD in sales in 2019 and 2020) - 2 archival documents describing new strategic partnerships - 2 archival documents with positive media attention on Odin
Frigg	Frigg developed a digital marketing platform and provided additional digital marketing services to clients	2017	1 founder (Founder 1) Experience: Frigg was the first start-up experience for the founder. Age: 30	7 (start) 8 (end) Note: Frigg peaked at 14 members	15 visits, 74 hours over 1.5 year	10 interviews - Founder 1 - Manager 2 - 8 team members	13 interviews - Founder 1 (x2) - Manager 2 (x2) - 9 team members	8 Interviews - Founder 1 - Manager 2 - 6 team members	- 1 archival document on how Frigg received a local award 2019 - 2 archival documents with positive media on new hires to Frigg
Balder	Balder designed and sold clothes through digital channels and pop-up stores. Balder focused on digital marketing and design to build their brand	2017	3 founders (Founder 1, Manager 3, and a board member) Experience: Graduate degrees and prior start-up founding experience Average age: 37	7 (start) 7 (end) Note: Balder peaked at 10 members	9 visits, 45 hours over 1 year	6 interviews - Founder 1 - Manager 2 - Manager 3 - 3 team members	5 interviews - Founder 1 - Manager 2 - 3 team members	3 interviews - Manager 2 - Manager 3 - Team member 2	- 3 newspaper articles describing the launch of Balder
Thor	Thor developed a platform for digitizing health data and lifestyle preferences	2017	1 founder Experience: Graduate degree and prior start-up founding experience Age: 38	3 (start) 2 (end) Note: Thor peaked at 6 members	8 visits, 22,5 hours over 1 year	3 interviews - Founder 1 - Manager 2 - 1 team member	6 interviews - Founder 1 - Manager 2 - 4 team members	3 interviews - Founder 1 (x2) - Team member 1	- 3 archival documents (social media posts and a newspaper article) describing the launch of Thor

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Table 2: Coordination mechanisms⁶

Cases	Overall rating ⁷	Rules & plans	Routines	Roles
Freya	+++++	<p style="text-align: center;">++</p> <p>Example Freya used OKR (Objectives, Key Results) to visualize goals and progress in meetings every week. OKR allowed Freya to breakdown the start-ups strategy into plans for each member</p> <p>Representative Quote It (the introduction of Scrum) has been amazing, you really see it in the marketing team. Previously, the team leader had to make a huge amount of micro-decisions every week...Now, with Scrum things are better and team members have more autonomy. (Co-founder 1)</p>	<p style="text-align: center;">++</p> <p>Example All teams in Freya worked in sprints, with sprint planning and sprint review meetings, and tasks organized in the same software solution across teams. Sprint reviews had a clear agenda, allowing teams to monitor progress and coordination</p> <p>Representative Quote “(During weekly meetings), you get to see whether the last period was successful, and that is really nice. You get an overview...I’m a big fan of those meetings – they work really well.” (Team member 6)</p>	<p style="text-align: center;">++</p> <p>Example Members in Freya successfully transitioned between roles on several occasions during data collection</p> <p>Representative Quote “You know OKR right? Everyone has an objective they are to achieve. So now I’m more in control regarding what’s expected of me. After we introduced it (OKR), we became more goal oriented. And my work is better planned...” (Team member 5)</p>
Odin	++++	<p style="text-align: center;">+</p> <p>Example Odin developed a checklist that served as a process description for dealing with client projects but had few other rules for prioritizing or measuring progress.</p> <p>Representative Quote “Our development activities are suffering under our heavy workload at the moment. I think, if our developers had told us that they are out of things to do, it would have taken us some days to define new tasks.</p>	<p style="text-align: center;">+</p> <p>Example Odin had few routines for coordinating work, but all members were co-located and discussed problems when needed</p> <p>Representative Quote “The collaboration between IT and myself is causing some frustrations. I don’t really get why things take so much time, both new developments and improvements ... I don’t get why things can go any faster – and that causes some friction between me and him. I ask: “how much time will it take?”.</p>	<p style="text-align: center;">++</p> <p>Example Members in Odin had clear roles based on their prior experience</p> <p>Representative Quote “Our roles were somewhat clarified in advance. For example, *Team member, 2* was to work on operations, I was to work with finance, and *Team member 3* had a background from design and IT, so he focuses on those areas. But we are</p>

⁶ The three types of coordination mechanisms we draw on to score our cases (rules & plans, routines, roles) are developed by Okhuysen & Bechky (2009).

⁷ To rate the presence and quality of coordination mechanisms, we assigned a score of “+” if a type of mechanism was present, and “++” if a type of mechanism was present within the start-up and experienced by start-up members as highly functional. We assessed the presence of coordination mechanisms through field notes from participant observation and the experience of start-up members through analysis of interview data. We then aggregated the given scores into an overall rating.

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		<i>The balance is not right as of now” (Team member 2, Odin)</i>	<i>He replies: “I don’t know!”. That’s not good enough! We need to have some timelines, some milestones, to work towards” (Manager 1)</i>	<i>flexible, and we share the workload between us” (Team member 1)</i>
Frigg	++++	<p style="text-align: center;">+</p> <p>Example The management in Frigg developed a plan for the start-up but struggled to implement it due to a lack of communication.</p> <p>Representative Quote “People really don’t know how things are going, but when it comes to our financial results and product development – really we don’t know the state of our firm. ..if we struggle financially, I would not know. We need a clearer view of how things are going in order to know when we need to step up” (Team member 3, Frigg)</p>	<p style="text-align: center;">++</p> <p>Example Teams in Frigg, especially the developer team, broke down work in sprints. Each sprint started with a sprint planning meeting and ended with a sprint review</p> <p>Representative Quote “We work in sprints, and that works really well. I learn a lot from attending sprint review meetings and get an understanding of where we are heading. We evaluate our progress, asking ourselves whether we are progressing according to our goals. We get a clearer understanding of what is needed to reach our goals and become more accurate in our estimates. It gives insight into how the project is progressing, and that’s good for the team” (Team member 7)</p>	<p style="text-align: center;">+</p> <p>Example Frigg organized into several teams, each with an area of responsibility. However, individual roles within each team were not always clear for members</p> <p>Representative Quote “I need to clarify my role here. Right now, I’m not sure whether I should dive into the technical aspects of developing our product or focus on project management. I am stuck in between. So I have to decide what I want to do, but I also need a mandate from the management.” (Team member 3)</p>
Balder	++++	<p style="text-align: center;">+</p> <p>Example Management in Balder had a vision for the start-up, but struggled to make their plan concrete and understandable for all members, thus lacking in implementation</p> <p>Representative Quote “No, we don’t have any clear goals for our firm as far as I know. Perhaps I just don’t pay attention, but I don’t think we do. So there is definably some room for improvement there. We have some individual goals though” (Manager 2)</p>	<p style="text-align: center;">+</p> <p>Example The logistics team worked according to Scrum, a routine that included regular sprint planning and sprint review meeting. Other teams had few such routines</p> <p>Representative Quote “We have morning meetings every Tuesday, where we focus on three things. First, we review and discuss the work we did last week. Then, we use a shared spreadsheet to update our results. Everyone sees the results of all team members, and we discuss how to improve. Finally, we discuss our plans for the coming week and whether we need support from someone else. In sum, we go through our results, our shortcoming, what we have learning, and how we can help each other” (Team member 4, Balder)</p> <p>“Yes, Logistics Lead runs stand-up meetings with his team, but me and the rest of the group is not involved” (Manager3)</p>	<p style="text-align: center;">++</p> <p>Example Balder organized into 3 teams, and members had a clear understanding of their individual roles</p> <p>Representative Quote “We are a management team of three, me, our COO and CMO. We make most of the bigger decisions. Then we have two people on design, they coordination with me and the CMO. There our COO is not involved. Our COO works with his logistics team, they are four people” (Manager 1)</p>
Thor	++	<p style="text-align: center;">+</p> <p>Example</p>	<p style="text-align: center;">+</p> <p>Example</p>	<p>Example</p>

	<p><i>Thor developed multiple action plans and to-do lists in meetings, but did not work according to these plans or complete the lists</i></p> <p>Representative Quote <i>“We have many lists, priorities and meetings where we discuss what to do. But then the energy falls. Our ability to implement does not match the size of our to-do list. So we are better at planning what to do than actually doing things”</i> <i>(Team member 1)</i></p>	<p><i>Thor had long meetings for all team members. These meetings had little structure, and were often not planned in advance</i></p> <p>Representative Quote <i>“I have to think about everything. And it feels like we are all over the place and that things are chaotic. I am hesitant when it comes to delegating work, and often I end up doing everything myself. When I delegate work, I start worrying as to whether it will be done. I always have to check up on people to see if they do what they are supposed to do. I spend a lot of time trying to remember which tasks I delegated to whom”</i> (Manager 1)</p>	<p><i>Members in Thor experienced their roles as unclear</i></p> <p>Representative Quote <i>“How our roles developed? Well, someone just said that he was capable of writing grant applications. And we just responded: “shit, that’s what we need!”. But now we have discovered that it does not really work. He cannot write these applications on his own, as he does not know our company well enough”</i> <i>(Manager 1)</i></p>
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Table 3: Organizational outcomes

Cases	Overall rating ⁸	Market growth	Received funding	Employee job satisfaction
Freya	+++++	++ Freya attained impressive sales growth throughout data collection. From 2017 – 2020, Freya doubled its revenue every year, reaching >1.5M USD in sales in 2020	++ Freya received 4 rounds of venture funding during data collection, raising a total of 15M USD	++ "Its been going really well. I used to work in another start-up before, so I can compare this job with that experience. Here, I get to do things I like, that I'm good at... I don't sit and do boring stuff, but I get to decide myself and be creative" (Team member 2)
Odin	++++	++ Odin attained substantial sales growth throughout data collection. From 2017 – 2020, Odin's revenue grew with at least 50% every year	+ Odin raised a six-figure sum in USD at the end of data collection	+ «I don't think we have managed to strike a balance. I feel that we are clinging to a train that moves faster than we will be able to hang on to for long" (Team member 3)
Frigg	+++	+ Frigg attained some sales growth throughout data collection. From 2017 – 2020, Frigg experienced some yearly revenue growth (10% - 50%) during data collection	+ Frigg did not seek venture funding, but generated other types of financial investments (loans, etc) during data collection	+ "There are some things not working well, causing frustrations. It's hard to raise issues about things that do not work, and I do not understand how decisions are made. I often feel very much alone now" (Team member 3)
Balder	+++	+ While Balder initially attained some revenue from sales, it struggled with limited sales growth and rising expenses. Pivoted before end of data collection	N/A (+) Balder had seed funding, and did not seek venture funding	+ "It all became very chaotic. I was only informed a week before the deadline, so I had to do too many thing in just a few days. I told them that this cannot happen again; they knew about the deadline well in advance, but I had to work under a lot of pressure, and that was not nice" (Team member 2)
Thor	+	No sales growth during data collection period. Struggled to make the prototype work. Closed down before end of data collection	No funding received during data collection period	+ "People in the team are frustrated. I think some team members would contribute much more if we were using our resources more efficiently, or if they felt that they were learning something on the job. I think we risk loosing some team members now" (Team member 6)

⁸ To rate organizational outcomes, we assigned a score of “+” if the start-up was somewhat successful on a given criteria and “++” if the start-up was highly successful. For “Market growth”, we define “somewhat successful” as positive sales growth across the data collection period and “highly successful as yearly sales growth >50% across the data collection period. For “received funding”, we scored start-ups as “somewhat successful” if they received venture funding or similar, and “highly successful” if they received venture funding that was described in news paper articles as outstanding. For “employee job satisfaction” we scored start-ups as “somewhat successful” if employees expressed how they were sometimes satisfied and sometimes dissatisfied, and “highly successful” if employees expressed being very satisfied most of the time. To rate *market growth* and *received funding*, we relied on an official database (publicly available revenue data) , interview statements and archival data, such as newspaper reports.. To rate employee job satisfaction, we analyzed data from interview with start-up employees (i.e. not founder or top-manager).

Table 4: Learning Sequences Across Start-ups

Learning Styles and Legend	Anticipatory Learning = A; Vicarious Learning = V; Experimental Learning = E; Trial and Error Learning = T; Improvisational Learning = I				
Case	Freya	Odin	Frigg	Balder	Thor
Sequence	A→V→E→T	I→E→T	A→V/I→E→T	A→V/I→E	I
Description	(A) Freya started their learning cycle by constantly trying to anticipate problems with their coordination. Thereby, they detected problems early on. (V) Freya then 'stole' ideas and practices from peers, competitors and best cases. (E) Freya then implemented the mechanisms stepwise, bringing in the whole team. (T) Now using new mechanisms, Freya discovered issues and opportunities with the mechanisms and started to customize them through combining and simplifying.	(I) Odin did not see structure as a solution but a problem. Therefore, they relied more on improvised solutions. (E) Odin implemented their improvised solutions in step wise fashion, making them stick in the organization. (T) Odin tried to adapt their coordination mechanisms. However, they did so to much less degree than Freya.	(A) Frigg did anticipate a need to develop coordination mechanisms. But they were not as vigilant in self-detection as Freya was. (V/I) Frigg did take in some practices like Scrum, but they also relied on unplanned, improvised solutions that lacked reflection. (E) Frigg did take steps to implement new coordination mechanisms in a stepwise fashion, yet they lacked the scaling element when compared to Freya. (T) Frigg did make attempts at learning about the new coordination mechanisms and to customize them through combining and simplifying, yet this approach was not adopted overall due to a lack of communication.	(A) Balder did show some anticipation of coordination problems but failed to react on it and take time to fix problems before they escalated. (V/I) The logistics team in Balder took in Scrum similarly to Frigg, but the rest of the start-up did not learn vicariously and instead improvised. (E) Balder did make attempts to implement new coordination mechanisms through experimentation but failed to scale mechanisms.	Thor generally failed to see coordination as a potential problem and take steps to create coordination mechanisms. Instead, they would improvise solutions in an unstructured and individual manner.
Result	In Freya solid coordination mechanisms emerged during the study. Furthermore, Freya was better at starting their cyclical sequence, their learning loop, and develop and improve coordination mechanisms as they scaled. Overall, Freya was therefore the best organized start-up.	While Odin was able to develop clearer roles, they suffered in terms of developing rules and plans and routines. The improvised coordination mechanisms took longer time to develop and make permanent in the start-up.	While Frigg were able to develop solid routines, they were less able to develop rules and plans and clear roles. Our findings indicate that while they followed the same path as Freya, they faced difficulty in making the development of coordination into a joint effort.	Balder was able to set up some coordination mechanisms such as role structures and routines such as Scrum, but they lacked an overall, structured approach to developing coordination.	Employees in Thor felt that the start-up lacked direction and conflict was apparent due to missed deadlines and failing collaboration. Partly due to their failure to coordinate, Thor faltered and closed down.

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Table 5: Anticipating Coordination

Definition	<i>Anticipating coordination</i> is a form of anticipatory learning where the start-ups take a <i>forward-looking perspective</i> where they see coordination as crucial in scaling and where they seek to detect potential problems before they manifest.			
Effect on coordination	<i>Anticipating coordination</i> is an important element in building coordination because it allows start-ups to solve issues before they escalate and becomes irreparable conflicts (c.f. Bingham & Kahl, 2014). Furthermore, the anticipation element provides motivation to then search for ways to coordinate.			
Case	Score & coordination result	Description	Representative quote 1	Representative quote 2
Freya	++ Freya very early on set up routines and they took steps ensure successful onboarding.	Freya would engage in anticipatory learning through sessions where they deliberately looked for potential gaps and errors in how they coordinated. They also tried to foresee future problems. As a result, Freya fixed escalating problems, such as that they were having too many meetings. Moreover, Freya considered roles and rules when hiring new people, thereby smoothening the onboarding process.	<i>“Some people are afraid of structure, as they see it as a waste of time. What it actually does is to focus peoples’ effort towards their goals. You have to invest some time in it, but it pays of in increased efficiency.” (Team member 1)</i>	<i>“Imagine start-ups not innovating their organization when they go from 5 to 20 people! How will you then be able to survive and adapt when your organizations grow by orders of magnitude? For us it’s obvious that we have to test new ways of doing things all the time” (Co-founder 2)</i>
Odin	Members in Odin had a negative view of formal coordination and therefore did not anticipate coordination problems .	Odin was skeptical to coordination, wanting to avoid the rigidity of formal rules, plans and routines. They believed that having coordination mechanisms would slow them down. Lacking anticipatory learning, Odin relied on improvisational learning where they improvised solutions to coordination problems that occurred	<i>“Early on you just have to run in every direction, because you are not quite sure where you are going, like with the business model and all. So, then it is not smart to have everything set in stone (Team member 2)</i>	<i>“Yes, at our previous employer we had goals and visions and all kind of stupid shit... I see that as a HR-thing. You need a model with a wheel and arrow and whatever... Vision is nothing – zero vision” (Team member 1)</i>
Frigg	+	The developer team in Frigg anticipated the need for better coordination mechanisms as they scaled. However, they perceived this at a later stage than Freya and were less deliberate in detecting potential coordination problems	<i>The developer team grew. Therefore, we introduced a few processes. For example, people review each other’s codes. We also do a few other things that help us avoid bugs. It helps us estimate how much work we can</i>	<i>“No one wants to stick out their head and say “we need to change how we do things around here!”. Now its more like: ‘Perhaps we should do this a little differently? No? Ok, lets just keep doing things the same way them’” (Team</i>

	the need to coordinate across teams.	Through anticipatory learning, Frigg's developer focused on setting up project management routines and re-arranged roles	<i>do, and to align our efforts (Team member 5)</i>	Member 3)
Balder	+ ⁹ Balder set up structured roles and set up a board with objectives.	Balder did anticipate that coordination would become a problem and also engaged in some self-detection. Yet, they were less effective and structured in doing so when compared to Freya. Through anticipatory learning, Balder focused on developing plans and to-do-lists that were visualized on a whiteboard in their office space.	<i>"We had some issues between the teams, as we were located in different cities. We struggled with communication. We should have travel more, to meet in person. But we just did not find time for travel – after all, you need to do your job first! Over time, we had less frequent discussions and exchanged less information" (Team member 5)</i>	<i>"Actually, Manager 1 was the one saying like "Here we have to be more organized" because she probably, and even from the feedback that team member 1 gave her, about the previous collection that it was always back and forth. For this years summer collection Team Member 1 said "we have to be more organized, because we are always back and forth with this collection"." (Team Member 2)</i>
Thor	Because they did not anticipate problems when they scaled, Thor faced serious issues when they hired three new members.	Thor viewed structures and formal coordination as unnecessary. Instead, they tended to blame individuals for problems. As a result, conflicts ensured and were allowed to escalate. To a lesser degree than Odin, Thor relied on improvisational learning, yet this was quite unstructured and not very popular in the team.	<i>I miss a proper project plan, with actual objectives. I have asked for it, because we need to be more goal oriented. Now, we seem to focus on to many different things. What are we really trying to achieve? (Team member 3)</i>	<i>"We don't really have a grand structure, we sit down and discuss where we want to go" (Manager 1)</i>

⁹ To score our cases on learning to coordinate we drew inspiration from Murray and colleagues' (2020) scoring system. Our scoring system is as follows: Blank = No or only very few examples of this learning style, + = Some examples of this form of learning across the start-up, or many examples in individual teams, ++ = Many examples of this learning style across the start-up

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Table 6: Steal with pride

Definition	<i>Steal with pride</i> is a form of vicarious learning where the start-up takes in ideas and practices from other start-ups or organizations.			
Effect on coordination	<i>Steal with pride</i> helps start-ups ‘jump-start’ coordination by providing ideas and practices that they can use. Thereby, they also solve the issue of lacking foundations (c.f. Bingham & Davis, 2012; 628)			
Case	Score & coordination result	Description	Representative quote 1	Representative quote 2
Freya	++ Freya stole ideas such as “meeting free Wednesdays, Scrum and in particular OKR from peers and books.	Freya engaged in vicarious learning by looking towards peers and best practice advice from books to identify coordination mechanisms. As a result, Freya introduced routines and rules based on the OKR framework and SCRUM. These routines and rules were readymade and thus more mature than what Freya could develop on their own.	“We apply the lean start-up framework both when solving tasks but also when it comes to our work processes. You don’t need to come up with something unique all the time. You see how other people solve things” (Co-founder 1)	We use a traditional functional division in our organization... And we, especially Manager 2, has a lot of experience with this way of working from his experience in the Army. Because we rely on the functional division commonly used in the army, it works for us” (Co-founder 1)
Odin	Odin improvised solutions as problems appeared. This tended to cause overload and stress. Thereby, Odin relied on <i>improvisational learning</i> . The reason for this choice was that Odin feared that copying others would limit their creativity and harm product development.	In Odin, ways of working emerged organically and spontaneously. They were not the result of vicarious learning. Lacking vicarious learning, Odin would rely on a simple role structure and ongoing discussions to coordinate members effort, rather than established routines, rules, and plans.	Even if we don’t have much structure, we are able to prioritize as we go ...How it works? Well, sometimes I just say “you two, do this!”. Then I write down our three most important tasks, show it to the team and ask; «are we on top of this?”. Then they say yes, and we don’t need to think about it anymore, as we roughly agree about the way forward. (Team member 1)	“We don’t use any fancy system that will make everyone sick and tired anyway. You probably worked according to such systems as an auditor and consultant? Luckily, we are not there yet.” (Team member 2)
Frigg	+ Frigg’s development team sat up better routines than the rest of the	Frigg had some vicarious learning, especially in the developer team. Yet, other teams in Frigg relied more on	“Recently, I have implemented that we have small meetings every morning. We talk for 3-5 minutes about what we have been doing and our plans for the day, quite	Around June I was thinking a lot about how we could improve project management. So I read up on Scrum, or rather, I repeated Scrum. I took out the things that would

	<p>start-up.</p> <p>The other teams in Frigg also relied on improvisation to identify new coordination mechanisms.</p>	<p>improvisation.</p> <p>Through vicarious learning, the developer team introduced routines based on SCRUM.</p>	<p><i>simply.” (Founder)</i></p>	<p><i>make sense for us, and scrapped the things that did not make sense in our context.” (Team member 3)</i></p>
Balder	<p>+</p> <p>The logistics team in Balder that used Scrum was more organized than the other teams. These teams would rely on improvisation to identify coordination mechanisms.</p>	<p>Balder’s logistics teams engaged in vicarious learning, but other teams did not.</p> <p>Through vicarious learning, the logistics team developed routines based on SCRUM. The other teams would often rely on intuition and therefore struggled to develop functional routines</p>	<p><i>“We have Scrum meetings and a whiteboard where everyone lists their tasks and work in progress. It gives an overview of what everyone is doing, just by looking at that whiteboard” (Team member 3)</i></p>	<p><i>We held a workshop in order to come up with ideas on how to reach our goals and work better together and so on. Manager 2 had the responsibility to sum up the ideas and then do something about them (Founder 1)</i></p>
Thor	<p>Thor struggled to learn from their own experience and develop coordination mechanisms.</p>	<p>Thor did not rely on or borrowed established practices. Instead, they tried to rely on their own experience.</p>	<p><i>“No, we did not scale up our structure when we onboarded new people. It was like everything else we do here: things happen at breakneck speed! The last 6 months have been chaotic” (Manager 2)</i></p>	<p><i>“You are never rid of the feeling that we have to experience things ourselves; you have to feel it a little bit before you understand why” (Manager 2)</i></p>

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Table 7: Experimental Implementation

Definition	<i>Experimental implementation</i> is a form of experimental learning that consists of start-ups trying out new coordination mechanisms through <i>minimal rollouts</i> and then <i>general scaling</i> across the start-up once they have found useful mechanisms.			
Effect on coordination	<i>Experimental implementation</i> helps start-ups build coordination as it provides them with understandings of what coordination mechanisms work. This stepwise implementation also helps them overcome resistance by proving mechanisms to members and thus engaging them in using the mechanisms.			
Case	Score & coordination result	Description	Representative quote 1	Representative quote 2
Freya	++ Freya embedded mechanisms such as OKR and Scrum into the whole start-up.	When introducing a new coordination mechanism, Freya would test it out on small scale first. Thereby, they would find out if it worked, and then convince the rest of the start-up to use it. As a result, Freya first tested SCRUM routines, learning that they were useful for them, and thus members became accepting towards using these routines.	“I think people have started to expect that its always going to be changes in our routines and in the frameworks we use. Its part of the culture. If that was not the case, implementation would be very difficult. I also think the attitude of manager 1 and manager 2 has been vital: they have a military background and are quite strict when it comes to routines and similar things. And the rest of the team has come to adopt their attitude” (Team member 3)	“Manager 2” is dedicated to make the process work. It’s one of his main responsibilities in Freya: he is a proper Shepherd, reminding everyone to follow the process” (Team member)
Odin	++ Odin successfully introduced smaller changes in their routines, such as a checklist for dealing with client cases	While Odin relied on an intuitive approach when developing their ways of working, the start-up would engage in experimental implementation to test and scale smaller changes frequently. Through experimental learning, Odin developed a routine for working on client project, including a checklist, that was	“Earlier, we had too few client cases because we were too rigid in our client selection process. So we sat down and discussed, and agreed to open the floodgates and just be less picky. It was decided, and as we were successful with more client cases, more high-quality clients would eventually get in touch as well” (Team member 2)	“We have to produce output at high pace, and therefore we need to make many micro-decisions constantly. We make changes rapidly, and sometimes it’s a challenge to keep everyone informed. Sometimes I think we make changes that are bigger than they should be. And even if I inform them (the rest of the start-up) on an ongoing basis, they don’t always get it. Sometimes they say: “what happened here?”. Things tend to fall between our areas of responsibility. But we need to move at a high pace, so its worth taking that risk (Team Member 3)

		successfully scaled up and used in all client projects.		
Frigg	+	<p>Through experimental learning, the developer team in Frigg would test and evaluate multiple frameworks for software development before deciding which one to scale up.</p> <p>However, other parts of the start-up had less experimental implementation. As a result, they struggled in making changes stick.</p>	<p><i>“The developer team grew. Therefore, we introduced a few processes. For example, people review each others codes. We also do a few other things that help us avoid bugs. It helps us estimate how much work we can do, and to align our efforts”</i> (Team member 3)</p>	<p><i>“Me and the Founder have made lots of mistakes. We let things slide. Then work processes and tasks started to go bad. They (team-members) don’t want to things that are not fun, such as sales. Our vision that with freedom follows responsibility has failed”</i> (Marketing Lead)</p>
Balder	+	<p>Through experimental learning, Balder’s logistics team tested and improved routines for working in sprints, including sprint review meeting.</p> <p>However, since the other teams in Balder had less experimental learning, the start-up did not manage to scale these routines.</p>	<p><i>“We talked about it, and we agreed that we needed to fix some issues. But then nothing happens, and I get a bit frustrated, but also worried about pushing the initiative even more”</i> (Logistics Lead)</p>	<p><i>“The weekly meeting we had today is something I suggested long ago... But then “Manager 3” does not care to attend these meetings, and then “Manager 1” just goes; “okay, lets just do this and that and keep it simple”</i> (Logistics Lead)</p>
Thor		<p>Thor largely failed to implement any meaningful coordination mechanisms.</p>	<p><i>“When we figure out what needs to be changed, we spend too much time actually making those changes. And that’s not just me: it’s the whole team ... we are a bit afraid of making such leaps of faith, a bit hesitant. So, we could use another team member, someone that would be able to push us a bit more”</i> (Manager 1)</p>	<p><i>“We are somewhat sloppy. We should have taken some measures to sharpen up, as things are a bit chaotic”</i> (Manager 2)</p>

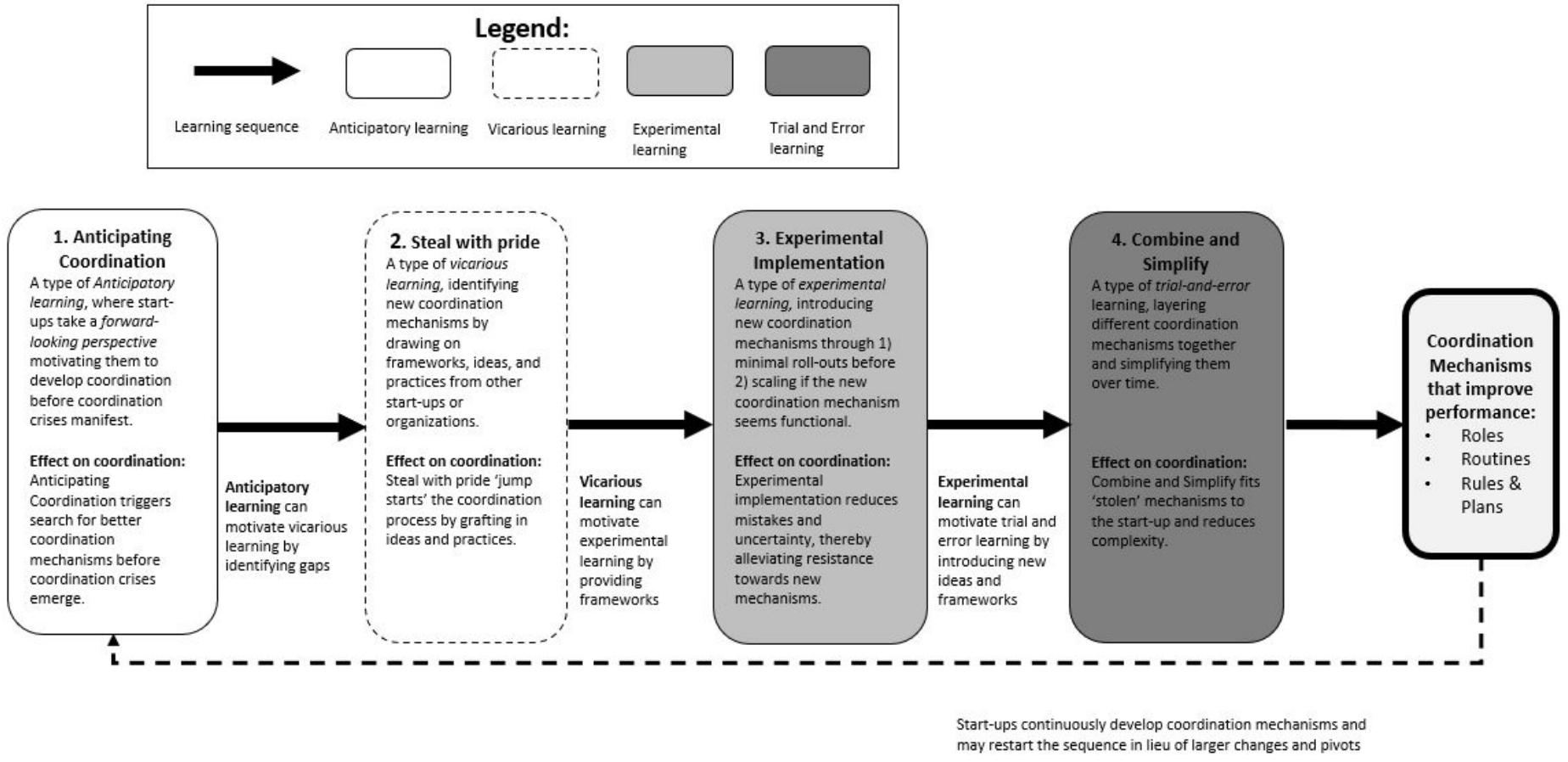
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Table 8: Combine and Simplify

Definition	<i>Combine and Simplify</i> is a form of trial-and-error learning, where start-ups learn how to layer together different coordination mechanisms and to simplify them over time. This improves coordination by fitting mechanisms to the start-up and by reducing complexity			
Effect on coordination	<i>Combine and Simplify</i> help start-ups simplify coordination so to avoid becoming too formalized and rigid.			
Case	Score & coordination result	Description	Representative quote 1	Representative quote 2
Freya	++ <i>Freya managed to combine Scrum and OKR. They also managed to simplify OKR.</i>	Through trial and error learning, Freya realized problems with the mechanisms they had introduced in the first step. For example, over time they realized that SCRUM took attention away from overall strategic goals and that OKR was to high-level. As a result, Freya combined OKR and SCRUM to develop routines, rules and plans that fitted their needs better. They also simplified routines based on OKR by extending the initial one-month work cycle to a three-month cycle, thereby reducing excess complexity.	<i>“We are happy with how OKR is working for us at the moment. But as we use it, we also experience that some aspects of it works well and that some does not. When we use the framework, we always ask “what if we do it this way instead?”. That allows us to continuously improve how we work” (Team member 1)</i>	<i>“We have actually tested out doing OKR process without a Shephard. However, surprisingly, it did not work. The Shepherd (process owner) has to remind people to follow the process. I was really surprised: even Manager 1, perhaps the world’s most conscientious person, struggle to follow the process without a friendly reminder” (Co-founder 2)</i>
Odin	+ Odin managed to simplify and improve the way they worked with clients.	Odin engaged in trial-and-error learning as they continuously simplified their client routine over by reflecting on and correcting this routine. However, Odin would not combine coordination mechanisms.	<i>“Yeah, I am trying to improve how we structure the work we do for our clients. So if Team Member 1 or Team Member 2 notice something that’s not working, they will write up a short report on it, in the system were we describe our routines. So we make small improvements all the time” (Team Member 3, Odin)</i>	<i>“We developed this form for serving our clients because we face-planted ... And then we said: we have to solve this now! So every time we made the slightest error, we logged it and came up with a solution“ (Team member 1, Odin)</i>
Frigg	+ The developer team	Through trial-and-error learning, the developer team combined agile sprint routines with a focus on the	<i>“Yes, we have those bi-weekly spring meetings. But we also have something we call «ball-meetings». Its simple we meet</i>	<i>“Its important to understand what people are dissatisfied with, and how we can improve. Now, the developer team and</i>

	simplified some of their frameworks.	start-up high-level goals to better prioritize tasks. A lack of trial-and-error learning in other teams led to increasing complexity in routines and lack of alignment between teams.	<i>up, throw a ball to each other and ask "what's up?". Its not a regular meeting in our calendar, now it happens sporadically. We have small discussions, and leave those meetings with some new ideas on how to solve things" (Team member 6, Frigg)</i>	<i>the sales team are not completely aligned. We should be one unit, not two independent groups." (Team member 8, Frigg)</i>
Balder	Balder faced over bureaucratization with too complex frameworks, which hindered overall coordination.	Balder did not manage to combine and simplify their coordination mechanisms. Our findings suggests that they lacked cohesion in the team needed for them to learn what to fix and improve. As a result of little trial-and-error learning, some members in Balder would abandon routines and disregard rules and plans.	<i>"We lack a clear vision and alignment of all our people. And now we are starting with these weekly meetings. But to be honest: I have been pushing for these weekly meetings for a while now. And we really need some metrics to measure our progress. But that has not been a priority" (Logistics Lead, Balder)</i>	<i>"But right now, I am not sure whether we will all have our own system or whether the company will create a system for everyone. So I think it is still a bit messy. I end up creating my own organizing system and I just have to get all the information from everyone and all the tasks from everyone and combine them." (Team Member 2, Balder)</i>
Thor	As Thor did not develop any meaningful coordination mechanisms, they did not Combine and Simplify either.	Thor was stuck in their way of working and did not manage to make any changes to the few routines they had. Several team members did not feel included or that they had the opportunity to suggest improvements.	<i>"I think we lack clear leadership. We discuss the same things, over and over again, but do little about them. It feels like we are stuck." (Team member 3, Thor)</i>	<i>"No, I sometimes hold back my opinion. I'm not in charge here. If this was my baby, I would be much more vocal. But since they (founders) are in charge, I don't feel like speaking up" (Team Member 1, Thor)</i>

Figure 1: A Theoretical framework for how start-ups develop coordination through learning sequencing



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3 **Marius Jones** (marius.jones@nhh.no) is a researcher at the Center for Applied Research (SNF) at
4 NHH Norwegian School of Economics, and a consultant with AFF at NHH. He received his PhD
5 in strategy and management from NHH Norwegian School of Economics. His primary research
6 focuses on teamwork in start-ups, with a particular focus on coordination, emotions, and
7 organizational learning.
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9

10 **Peter Kalum Schou** (peter.k.schou@bi.no) is an Associate Professor at BI Norwegian Business
11 School. He received his PhD in economics and management from Copenhagen Business School.
12 His research interests are scaling of start-ups and science-based ventures, as well as how new
13 digital technologies affect entrepreneurs, workers and activists.
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