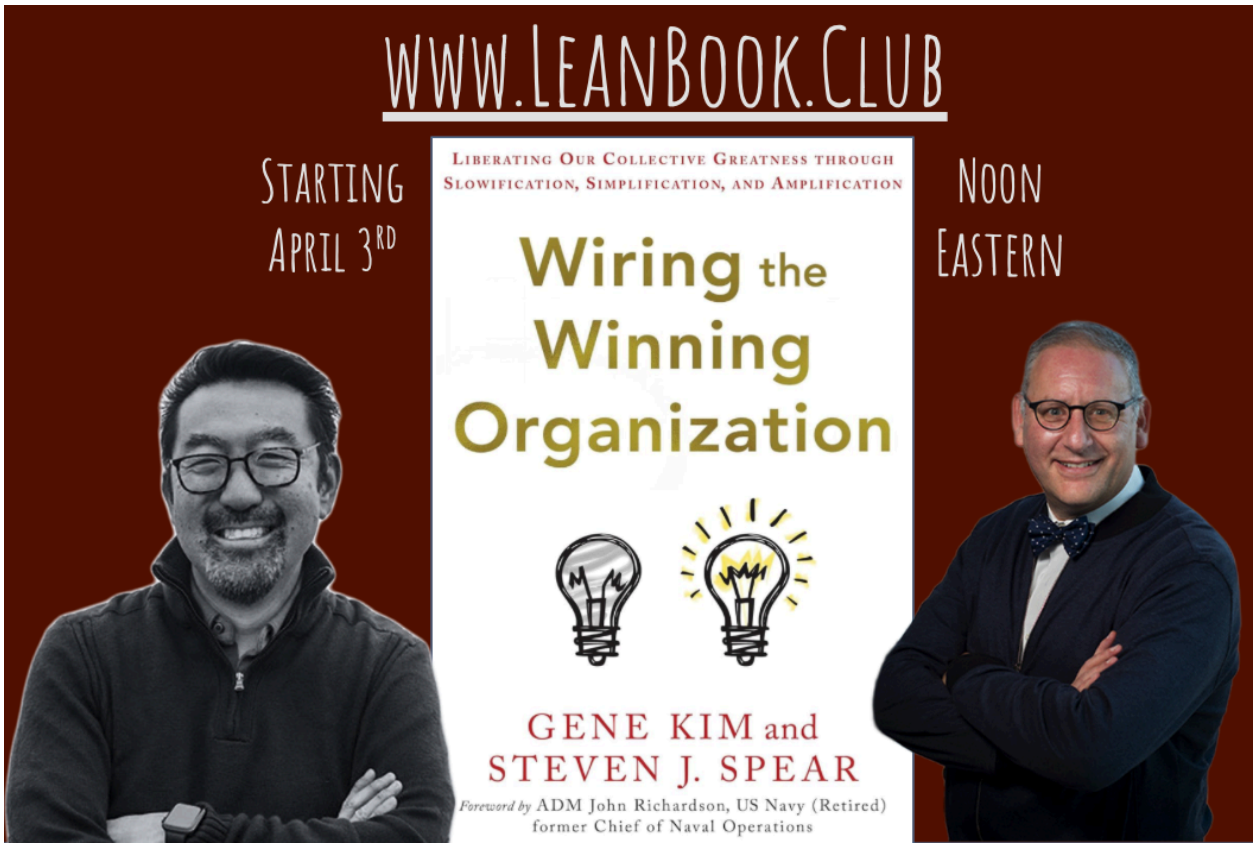
BOOK NOTES: Wiring the Winning Organization

Wiring the Winning Organization: Liberating Our Collective Greatness through Slowification, Simplification, and Amplification

by Gene Kim (Author), Steven J. Spear (Author)



Announcement

New virtual LeanBook.Club starting April 3rd.

Book: Wiring the Winning Organization: Liberating Our Collective Greatness through Slowification, Simplification, and Amplification

Wiring the Winning Organization: Liberating Our Collective Greatness through Slowification, Simplification, and Amplification Hardcover – November 21, 2023
by Gene Kim (Author), Steven J. Spear (Author)

When: Starting April 3, 2024, weekly on Wednesdays from Noon to 1 PM Eastern for six weeks.

Sign-Up: Sign-up at www.leanbook.club. I am limiting this to 15 participants. Microsoft Teams invitations will be sent to participants.

Next Steps: Sign up, order your book*, and read the first week's assignments on

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Agenda

1. Wednesday Group
    a. Week 1, 4/3/24, Part 1- A New Theory of Performance Management (Chapters 1-3)
    b. Week 2, 4/10/24, Part 2 - Slowification (Chapters 4-6)
    c. Week 3, 4/17/24, Part 3 - Simplification (Chapters 7-9)
    d. Week 4, 4/24/24, Part 4 - Amplification (Chapter 10)
    e. Week 5, 5/1/24, Conclusion, Appendix A, Appendix B
    f. Week 6, 5/8/24, Author Q&A
2. Friday Group
    a. Week 1, 4/5/24, Part 1- A New Theory of Performance Management (Chapters 1-3)
    b. Week 2, 4/12/24, Part 2 - Slowification (Chapters 4-6)
    c. Week 3, 4/19/24, Part 3 - Simplification (Chapters 7-9)
    d. Week 4, 4/26/24, Part 4 - Amplification (Chapter 10)
    e. Week 5, 5/3/24, Conclusion, Appendix A, Appendix B
    f. Week 6, 5/10/24, Author Q&A

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Spear once worked in finance, at a Congressional agency, and at the University of Tokyo. He has a doctorate from Harvard, a masters degrees in mechanical engineering and management from MIT, and a bachelor's degree in economics from Princeton. He and his wife, Miriam, an architect, live in Brookline, Massachusetts, where they volunteer for several community organizations. Follow Steve on LinkedIn at www.linkedin.com/in/stevespear/.

Notes:

3. Week 1, 4/3/24, Part 1- A New Theory of Performance Management (Chapters 1-3)

a. Foreword

i. every person in the crew serves on both types of teams—a functional team to supply and maintain the ship's material and personnel status in top condition and an operational team to drive the ship through the water, executing its mission

ii. but we were simplifying our task by modularizing—forming coherent teams that could train and perform their required tasks with little interference to or from adjacent teams. We linearized our approach into discrete work streams to prepare for extended operations. Then we incrementalized our tasks—first focusing on fundamentals and then learning the specific challenges for this specific mission.

iii. That's just the first part—simplifying in time and space.

iv. "Practice doesn't make perfect; perfect practice makes perfect!"

v. Learn and improve all the time through feedback and correction—through amplification.

vi. The decay in performance usually starts with neglecting amplification—suppressing meaningful feedback in the interest of schedule or fiscal pressure. The team loses awareness of itself, of how dramatically performance is degrading. Small errors build up, shortcuts become the norm, and the system proceeds, relying on being lucky rather than being knowledgeable and rigorous. So feedback stops first.

vii. The last thing to go is simplification. You see, the three aspects of operational excellence—slowification, simplification, and amplification—all serve to reinforce one another.

viii. Once the first two go away, simplification, including its three techniques (modularization, linearization, incrementalization), just evaporates.

ix. In the absence of the corrective forces of simplification, slowification, and amplification, low standards and luck become the norm, until luck runs out, disaster strikes, and the investigation uncovers the tragic timeline that shows how the team's wiring became frazzled and undone.

x. every minute was spent on achieving outcomes at the most decentralized level of capable performance.

xi. And when a member of our team left to go to another team, they instantly became a leader. High performance and high morale… that's magic.

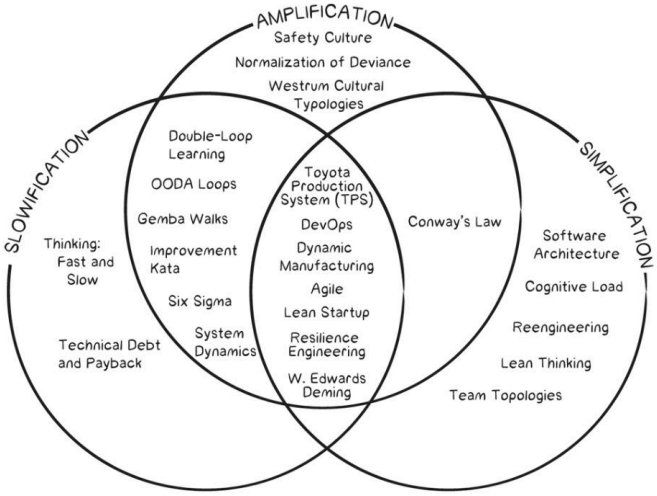
b. Preface

i. with the best experiences need fewer resources, less capital equipment, and less time to accomplish greater things.
ii. The best leaders create, sustain, and improve their organizations' social circuitry,* the overlay of the processes, procedures, routines, and norms that enable people to do their work easily and well.
iii. It should be no surprise, then, why leaders of great organizations are so invested in creating outstanding processes and procedures.
iv. there was something in common between agile, DevOps, lean, the Toyota Production System, safety culture, resilience engineering, and so much more—that they were all incomplete expressions of a far greater whole.
v. the common issue across all situations is creating conditions in which people's ingenuity can be liberated for its best possible use.
vi. A theme common across these various tools is that they recognize organizations as "platforms" through which people collaborate toward achieving common purposes. Focusing on the human element is consistent with Dr. Douglas McGregor's Theory Y, from The Human Side of the Enterprise, which emphasizes the positive motivations people have toward shared objectives, taking responsibility, and being creative and imaginative. It is also consistent with Dr. W. Edwards Deming's teachings on collaboration, systems thinking, and profound knowledge.

c. Chapter 1: The Pinnacles of Human Achievement and Why We Form Organizations

i. integrated into collective action for that common purpose.
ii. All that distributed genius—thousands of people working toward a common goal, inventing in parallel, with individual teams each working on their challenging problems and knowing that their efforts are important and fit into a larger goal—all that came together, be it in that small step on the moon or in that medication shaken out of a bottle.
iii. theory of performance about how leaders can create the conditions so that people can do their work easily and well.
iv. We assert that greatness is created through three mechanisms, which create the difference between success and failure: •slowification, to make solving problems easier to do, •simplification, to make the problems themselves easier to solve, •and amplification, to make it obvious that there are problems that demand attention and whether they've been seen and solved.
v. Figure 1.1 shows how these different practices are examples of the three mechanisms of slowification, simplification, and amplification. Figure 1.1 Venn Diagram of How Different Practices Slowify, Simplify, or Amplify

FIGURE 1.1 Venn Diagram of How Different Practices Slowify, Simplify, or Amplify



But none of the aforementioned methods or tools alone can wire your organization for suc-

1.

vi. The best organizations generate more value in less time, at lower cost, and seemingly with less effort. They are simply “wired to win.”

vii. When people have difficulty doing their work easily and well, despite investing their best time and energy to support the larger effort, we shouldn’t expect the enterprise as a whole to perform well either. This is an organization that has not been wired to win.

viii. the leaders amplified problems and devoted time to solving them, creating solutions that could be systematized.

ix. What they experienced is what we observe in all organizations that are wired to win: It’s easier to work. Collaboration seems choreographed. Performance is graceful. And beneficiaries are grateful.

x. The Three Layers Where We Create Value

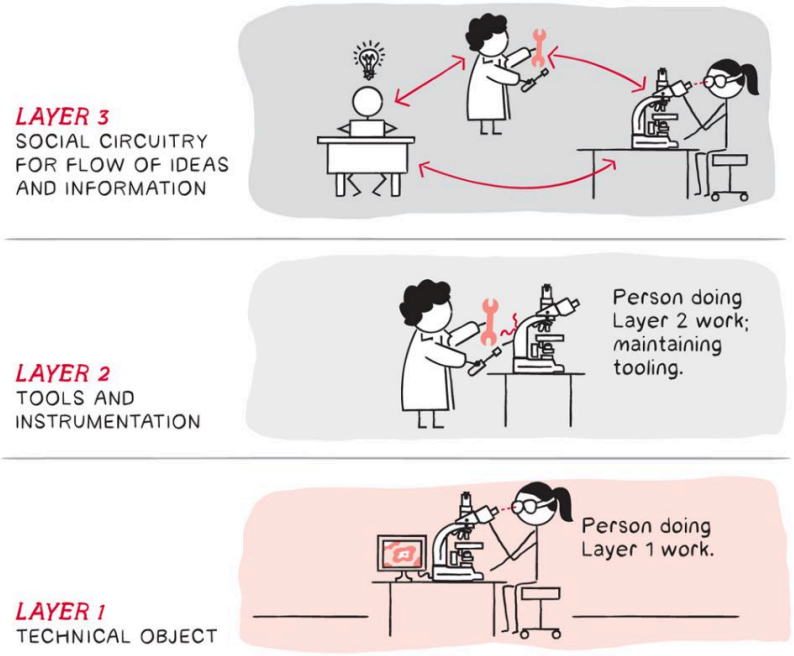
xi. Regardless of domain, collaborative problem-solving occurs on three distinct layers, where people focus their attention and express their experience, training, and creativity:

xii. Layer 1 contains the technical objects being worked on. These are the technical, scientific, and engineered objects that people are trying to study, create, or manipulate.

xiii. Layer 2 contains the tools and instrumentation. These are the scientific, technical, or engineered tools and instrumentation through which people work on Layer 1 objects.

xiv. Layer 3 contains the social circuitry. This is the overlay of processes, procedures, norms, and routines, the means by which individual efforts

are expressed and integrated through collaboration toward a common purpose. This is the “socio” part of a sociotechnical system.



xv.

xvi. Slowification makes it easier to solve problems by pulling problem-solving out of the fast-paced and often unforgiving realm of performance.

xvii. Simplification makes the problems themselves easier to solve by reshaping them. Large problems are deliberately broken down into smaller, simpler ones through a combination of three techniques: incrementalization, modularization, and linearization.

xviii. Amplification makes it obvious there are problems, and makes it clear whether those problems have been seen and solved.

xix. What we have found is that in winning organizations, leaders are deliberate about ensuring that Layer 3 (social circuitry) is supportive of people’s efforts in solving Layer 1 (technical object) and Layer 2 (tools) problems.

xx. This might remind some of the concepts of servant leadership or front-line empowerment, but this is more than that. It is an emphasis on leaders actively engineering the social circuitry of their organization, so when people for whom they are responsible badge in, buzz in, and otherwise arrive to do work, they walk into situations that are constructed to be the most conducive for success.

d. Chapter 2: Navigating from Danger Zones to Winning Zones

i. By coherent, we mean having the quality of a unified whole.

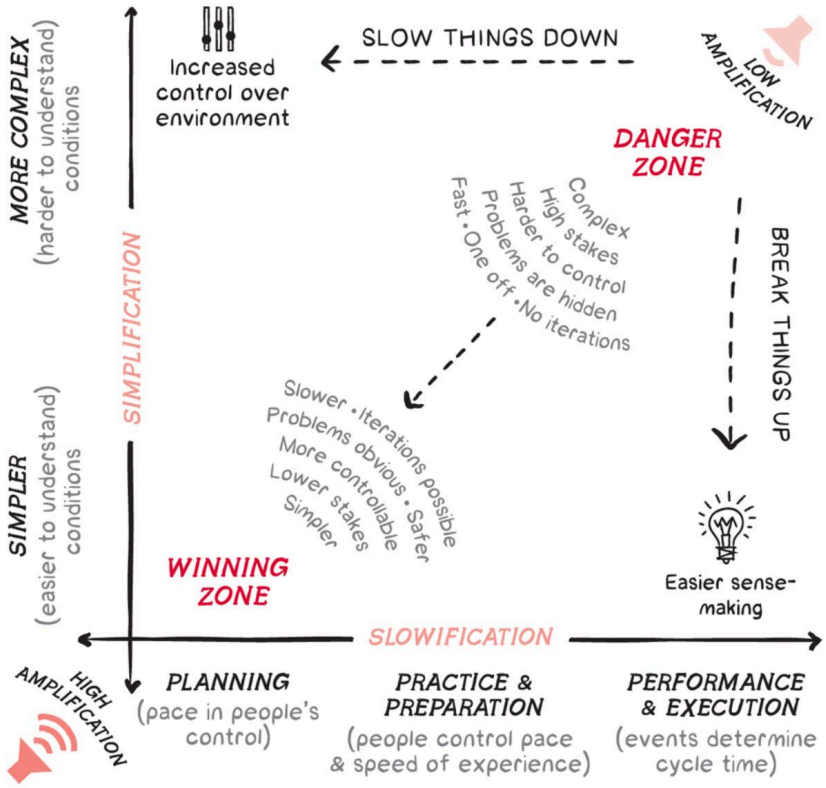
ii. This was made possible by switching from loosely coupled elements (people in planes and control towers) to tightly coupled elements in a well-defined, coherent working group (Maggie, her instructor, and a flight controller on their own frequency).
iii. At times, some of this work is loosely coupled, while at other times, it is tightly coupled. It is not arbitrary. Instead, it depends on how much coherence has to be provided to whom, in which working groups, and the type of problem they are trying to solve.
iv. Conversely, as you look around your work environment, are there people who are responsible for some portion of a larger problem scattered around the organization, not taking into account how coupled their work is? If so, this is likely because a couch problem is being solved by multiple chair teams. People who should be solving problems together can't. Collaboration should be frequent, fast, and rich but becomes occasional, slow, and imprecise. Instead of conversation, there are forms, work orders, tickets, intermittent meetings, and convoluted reporting channels.
v. Vignette Two: Moving Furniture and familiar to anyone who has ever worked in a functionally oriented organization—where people are divided based on their specialties. Leaders in these organizations often assume things will naturally self-organize or that schedules can always integrate those specialties toward a common purpose.
vi. One potential result is the system is over partitioned, so no part in the system is coherent. In other words, no part of the system can work independently, requiring massive coordination effort to do anything at all.
vii. Requiring one year to add this simple checkbox is not because it is technically challenging at Layer 1 (the object being worked on) or Layer 2 (the tools and instrumentation). Quite the opposite. Instead, the checkbox had become "stuck" because of the inadequate Layer 3 (social circuitry) that leaders created among the forty teams. Each team operated independently of each other. They had their own priorities, budgets, operating plans, schedules, and so forth. The checkbox was "stuck" in just the same way as the other three examples.
viii. Note how any isolated performance measure, such as "number of pieces of furniture moved" or "number of walls painted," did not improve overall performance—and may likely make things worse. For instance, to meet the furniture-moving goals, movers may start moving rooms before they are needed, jeopardizing the rooms that actually need moving.
ix. Lack of Isomorphism between Layer 3 and Layers 1 and 2
x. Isomorphism is the quality of related items having similar structures. In the simplest case, the work of refurbishing a room requires movers to clear out the furniture, which signals the painters to begin their work, who, upon completion, signal the movers to bring the furniture back in when the paint is dry to the touch.

xi. They've used slowification to solve difficult problems ahead of time, during planning and preparation, so they are spared surprises during performance.
xii. Rather than "being more careful" or "working around the problem," they solved the actual problem. By amplifying the signal of problems and fixing them offline, work is quicker, easier, and safer.
xiii. So far, the movers and painters have created advantages for themselves by creating room teams (simplification), sequencing their work within the teams (simplification again), solving more difficult problems offline (amplification and slowification), and capturing their best-known approaches as "standards" for getting each room done (simplification again).

e. Chapter 3: Winning Based on Liberating Ingenuity

i. The basic nature of the work at Layer 1 (technical object) and Layer 2 (tools and instrumentation)
ii. move their teams out of the danger zone and into the winning zone.
iii. People working in the danger zone are unlikely to be able to fully use their ingenuity, to solve difficult problems individually and collaboratively, and to bring new and useful insights into practice effectively. In the danger zone, conditions are complex, fast changing, and unforgiving. It's hard to exercise control and the stakes are high. Learning from experience is challenging in this space.
iv. On the other hand, when leaders put those same people in the winning zone, conditions are simpler and slower moving. Control can be exercised and the stakes are lower. Learning from experience is possible. And people are capable of inventing wildly innovative and useful solutions to challenging problems.
v. Slowification makes solving problems easier to do, simplification makes difficult problems easier to solve, and amplification makes it obvious that there are problems that demand attention and whether or not they've been adequately addressed.
vi. Figure 3.1 Moving from the Danger Zone to the Winning Zone through Slowification, Simplification, and Amplification

FIGURE 3.1 Moving from the *Danger Zone* to the *Winning Zone* through Slowification, Simplification, and Amplification



1.

vii. Modularization, the first technique of simplification, is a concept that is used heavily in computer science. It refers to partitioning large systems into smaller ones, which are each coherent. They connect to each other through pre-established interfaces (just as air traffic controllers and flight crews followed a terse and coded protocol during normal operations in Chapter 2). This property allows modules to hide internal complexities, which is called “information hiding.”

viii. Instead, it emerged through incrementalization, the second technique of simplification. Rather than changing everything all at once, what was known was kept intact and novelty was added bit by bit.

ix. there were small iterations and experiments that the room teams performed to deal with difficulties as they emerged. It was not someone trying to outline in advance every possible issue they could imagine occurring, and then designing and implementing those solutions all at once.

x. As we’ll see in Part III, simplification, through the techniques of modularization, incrementalization, and linearization, makes it far easier to engage large numbers of people in managing and mastering large, complex, and otherwise unwieldy situations.

xi. Amplification makes it more obvious, earlier and more often, that problems exist for which people's ingenuity is needed to create solutions.

xii. "We shape our buildings and afterwards our buildings shape us." Similarly, we shape the architecture of our organizations (how they are wired), which then shapes the behavior of the people within them.

xiii. However, all too often, organizations have flawed wiring (Layer 3), which means we spend all our time and energy talking to the wrong people, at the wrong time, in the wrong way, and often about the wrong things. Under these conditions, it is no wonder that doing even small things requires heroics.

xiv. We need fast and frequent feedback to keep our systems under control.

xv. As a leader, you are responsible for the achievement of your organization's goals and for creating the organizational and management systems that everyone in that organization uses to contribute to those goals. Thus, it is your professional and moral responsibility to create the conditions so that people can contribute to those organizational goals and create value for both the customers that depend on your organization and the colleagues who depend on them. In particular, this requires you to adopt a developmental mindset, one oriented around designing, sustaining, and improving the social circuitry that lets people do great work easily and well. This, as we show throughout this book, is antithetical to a transactional mindset, reflecting an assumption that leadership is largely a matter of giving instructions and determining who is doing what, when, where, and with what resources.

xvi. The model line is a microcosmic set of processes relative to the enterprise as a whole. While model lines are small, they are still coherent. There's a natural boundary around these model lines with natural beginnings and ends and obvious starts and stops. It's in the model line that people can practice applying and mastering slowification, simplification, and amplification.

xvii. The model line is a small, unobtrusive, "safe" environment to introduce and reinforce new behaviors, the positive results of which convince people to believe in a new way of managing the situations for which they are responsible.

xviii. Amplification: The act of calling out problems consistently so help is generated and swarms the problem to contain it and investigate, so causes can be found and corrective actions created to prevent recurrence.

xix. Isomorphism: The quality of related items having similar structures so they can fit and operate together (e.g., "hand in glove"). In our context, we use isomorphic most frequently to describe to what extent the Layer 3 social circuitry supports and enables the work being done in Layer 1 (technical object) and Layer 2 (tooling and instrumentation).

xx. Layer 1 problem: A problem with the object on which work is being done (e.g., “I don’t understand the design or the function of this thing.”). Layer 2 problem: A problem with the instrumentation or equipment used in the work (e.g., “I’m having problems with the equipment needed to make the part.”). Layer 3 problem: A problem with the social circuitry or organizational wiring (e.g., “I don’t even know what part I’m supposed to be making right now.”).
xxi. Simplification: Reducing the number of interactions one component of the system has with other components of the same system
xxii. Slowification: Shifting problem-solving from performance (operation, execution) back to practice (preparation) and planning with forceful backup, stress testing, and other deliberate ways of finding flaws in thinking before they become flaws in doing.

4. Week 2, 4/10/24, Part 2 - Slowification (Chapters 4-6)

a. Chapter 4: Slowification: A Theory Overview

i. The US Navy’s Top Gun program is an example of slowification.
ii. Slowification is the first of the three mechanisms that move organizations out of the danger zone and into the winning zone.
iii. go slow to go fast,
iv. Slowification is applied in one of two ways. The first involves slowing ourselves down so we can be more deliberative and self-reflective. An
v. The second involves slowing down the environment (i.e., pausing work).
vi. When we’re under pressure, due to time or other factors, we are forced to depend on fast thinking (System 1) to generate answers quickly, these are our already-established heuristics, habits, preexisting routines, etc. (i.e., muscle memory).
vii. fast thinking: it makes us more susceptible to poor decision-making.
viii. TABLE 4.1 Advantages and Disadvantages of Fast and Slow Thinking
ix. Cognitive Biases Even if we’re in familiar situations, our heuristics and habits can still fail us because we are prone to cognitive biases,
x. Figure 4.1 The Three Ps: Planning, Practice, and Performance
xi. The planning environment (e.g., design or development) is the slowest-moving, lowest-cost, safest environment in which to develop and test ideas.
xii. The practice environment (e.g., preproduction, testing, offline problem-solving) is a more demanding environment than planning because ideas are being put into action.
xiii. In the practice environment, feedback is used to improve our plans and improve our abilities to execute those plans.

xiv. The performance‡‡ environment (e.g., operations, execution) is the most unforgiving environment. It controls the pace of the experience, forcing us to depend almost exclusively on already-developed routines, skills, and habits.
xv. How Do We Slowify? Think of slowification as the “bullet time” special effect in The Matrix, where the main character slows or pauses time entirely, allowing them to dodge bullets or defeat their nearly frozen opponents.
xvi. When we cannot slow down the environment, we create triggers to slow down our fast-thinking processes. This signals that we need to be more deliberative and creative rather than impulsive and dependent on preexisting routines.
xvii. Figure 4.3 Using Slowification to Move from the Danger Zone to the Winning Zone
xviii. In all phases and environments, the common element to slowification is feedback.
xix. 1. As a leader responsible for the social circuitry (Layer 3) of your organization or team, to what extent have you created an environment where problem-solving is easier?

b. Chapter 5 Slowification: Case Studies in Planning, Practice, and Performance

i. Pausing Performance vs. Maintaining Operating Tempo
ii. The most important element of their strategy was creating a dynamic of pausing even when small problems occurred, so solutions could be developed and practiced before racing resumed.
iii. The 2014 crew used the same strategy: race using your best-known methods (what was in the lessons-learned playbook) but pause performance (slowify) when you see a problem. Then, use the better understandings and capabilities learned from deliberative, slow thinking.*
iv. Case Study: Mrs. Morris/ Ms. Morrison: When We Don’t Pause Performance
v. Figure 5.2 Diagram of Wrong Patient Event
vi. Unlike the MIT sailing team, in this case people didn’t pause as the situation deteriorated.
vii. First, leaders must learn to allow for pauses in performance to study and reflect. This is what the MIT Sloan sailing team did, even pausing in the middle of a race to study what was going wrong and develop new routines to use in performance. This is what outstanding operators routinely do.
viii. Many will note that Dr. W. Edwards Deming’s learning cycle of Plan-Do-Study-Act (PDSA) is a tool to encourage slowification. Following

the PDSA loop, teams develop a “Plan” that captures whatever is best known about a situation, “Do” according to that plan, and then “Study” the experience for differences between what happened and what was predicted to happen. Then, they further study the situation to develop a better understanding of what to do, why, and how to do it. Finally, they “Act.

ix. Second, leaders must capture the lessons learned to create an ever-improving baseline.

x. They built a diagrammed playbook of what to do, how to do it, and when it would be necessary.

xi. In doing so, they captured the logic behind “standard work.” When done well, it’s a way to capture the best-known approaches, make them available for repeated use, and use them as the basis for further improvement (a topic we’ll return to in Part III: Simplification).

xii. Kranz and his colleagues created the conditions (the social circuitry) for a vast number of people in a sprawling enterprise to see and solve problems, and deploy useful solutions reliably and quickly. As a result, when they found themselves in a dangerous situation,

xiii. Armstrong and Aldrin had prevalidated methods for figuring out what to do and how to do it.

xiv. Shuttle managers had gotten used to not worrying about the “monsters in the tails.” The tragedy, of course, is that the monsters had not gone away; they had just been waiting.

xv. As a leader, ask yourself: Of the things you are currently planning, are you humble and open-minded enough to expose your best ideas to aggressive testing? When those tests find flaws, will you be receptive enough to recognize that your best ideas have been refuted? And once those ideas are refuted, will you be creative enough? Will you solicit the contributions of others to generate new ideas that can be tested?

xvi. As a leader, you set the operational tempo. But ask yourself: Do you also reserve enough time to find the “monsters in the tails”?

xvii. Rather, these events were deliberately designed to reveal flaws in thinking long before they became consequential flaws in doing.

xviii. This is an example of compliance leadership, where leaders expect that instructions be followed without question.

xix. As a leader, this should make you ask the following questions: When you create plans, do you treat them as “finished,” something ready for performance, for execution in operation? Do you expect a “Yes, Admiral” reply? Or, do you treat plans as your first, best guess of what to do, why to do it, and how to get it done? Do you invite challenges to all aspects of your thinking? Is your intent upon first showing your plans to get a “Yo, Admiral” push back?

xx. Crew Resource Management (CRM),CRM includes training on speaking up directly, fostering psychologically safe conditions for others to speak up, and training in simulations. This training ensures everyone's experience and input gets integrated, not solely the captain's. This prepracticed technique helps crews under great distress escape the limiting controls of "fast thinking," allowing them to use slow thinking to figure their way to a solution. In other words, CRM provided a set of Layer 3 (social circuitry) routines to aid in problem-solving under duress, preventing Layer 1 and Layer 2 habits from taking too much hold.

xxi. fall into the behaviors associated with duress: fight, flight, freeze, or appease.

xxii. This difference in outcomes was not due to a lack of technical skills of the flight crews (Layer 1 or 2 problem). Instead, it was due almost solely to how the social circuitry of the UA232 flight crew was wired (Layer 3). This wiring enabled effective decision-making and problem-solving, even under the most trying circumstances.

xxiii. As a leader, reflect on these studies and ask yourself: When the pressure's greatest and the stakes are the highest, does that trigger you and your team into fight, flight, freeze, or appease responses? These are the behaviors that trap us in the danger zone. Or have you practiced recognizing these situations, with a trigger to slow things down? If yes, you're better equipped. If not, then you still have some work to do.

xxiv. •Planning: Develop a plan for responding to an earthquake in Northern California that destroys all the datacenters in that region. •Practice: Perform an exercise to recover from all datacenters in Northern California being destroyed. •Production: Turn off datacenters in Northern California.

xxv. Robbins created disaster recovery exercises called "Game Days." Just like Krishnan at Google, Robbins and Amazon engineers concluded it was not enough to practice in a test environment. Instead, they would deliberately schedule bringing down critical production components that powered Amazon.com and then practice recovering.

xxvi. Chaos Monkey, which simulated AWS failures by constantly and randomly killing production systems.

xxvii. As a leader, these examples of slowification should make you ask: Are you regularly looking at situations? And before you must begin performing, are you regularly conducting some version of dress rehearsal? If not, you may be missing chances to identify flaws in your thinking and to see gaps in what you can do. If you miss those chances, they will express themselves in the unforgiving performance environment.

xxviii. Highlight(pink) - Chapter 5: Slowification: Case Studies in Conclusion

xxix. The difference between great and everyone else is not due to chance, nor is it due to esoteric, idiosyncratic factors that give one group an advantage. Quite the contrary. Superior performance (and inferior

performance) is a direct reflection of management systems' capabilities—that is, the social circuitry of organizations.

xxx. It is the leader's responsibility to ensure people are able to use their energy and time in ways that are productive, appreciated, and value-adding. Doing this requires resisting the pressures of maintaining operating tempo.

xxxi. Table 5.2

c. Chapter 6: Slowification: Exemplar Case Study and Further Examination

i. These lessons were captured and rolled into practice. The BIDMC plan, for instance, incorporated lessons learned from previous marathons and other emergencies, and considered areas and departments throughout the facility that might be affected. The 2013 plan had been updated to include social workers to help reunify runners with their families.

ii. Dealing with a surge in well-intentioned volunteers proved another challenge (e.g., people trying to insert themselves into the social circuitry without having been wired in deliberately).

iii. How Well Do We Capture Knowledge?

iv. The MIT Sloan sailing team deliberately created a book of lessons learned from the repeated pauses in performance, so those lessons could be reused, not only race to race but season to season and crew to crew.

v. Newton discovered the laws of mechanics and motion, but it wouldn't have mattered if he did not also write down what he

vi. learned, print it, and have it curated and distributed to scientists through the Royal Society.

vii. Knowledge can be captured in physical objects as well (e.g., fixtures to hold materials in place, jigs to guide work, and gauges to ensure thing are fabricated correctly). 23 These tools mean experts' wisdom are expressible through the hands of many, even those of amateurs, leading to radical gains in productivity.

viii. #0 Feedback-Free, Non-Learning Dynamic:

ix. #1 Incorporating Feedback into Planning:

x. #2 Incorporating Feedback into Practice:

xi. #3 Incorporating Feedback into Performance:

xii. The Learning Leader

xiii. A learning leader (also known as developmental leadership) creates a culture where people can say what they really think.

xiv. psychologically safe culture that encourages people to share ideas, resulting in the flow of important information.

xv. A learning leader is comfortable with not knowing the answer. They are more concerned with asking the question and listening to their team. A learning leader makes training a priority and trusts their team to fulfill that

training. Finally, a learning leader actively engages in slow thinking; this is the learning leader's superpower.

5. Week 3, 4/17/24, Part 3 - Simplification (Chapters 7-9)

a. Chapter 7: Simplification: A Theory Overview

i. Remember, slowification makes it easier to solve problems by changing the conditions in which the problem-solving is occurring. Simplification makes the problems themselves easier to solve. It achieves this through three techniques—incrementalization, modularization, and linearization. In short, simplification breaks up situations that are big, complex, convoluted, integrated, or highly intertwined and makes them more manageable because they are smaller, contain fewer departures from what is already known, and are easier to understand in their construction.

ii. A component is coherent when all the elements that are necessary to generate an output are included.

iii. simplification uses three techniques:

iv. Incrementalization: Partitions what is novel (which needs to be tested) from what is known (which is already validated) into their own self-contained, coherent units and adds to the novelty in many smaller increments rather than in a few large attempts. The benefit is that we iterate and test changes on fewer factors and on a smaller portion of our system more quickly and safely.

v. Modularization: Partitions a large, integrated system that is unwieldy in size, complexity, or intertwined relationships into smaller, simpler, more numerous coherent pieces. These coherent modules are less coupled to each other because they are connected through only a few well-defined and stable interfaces. The benefit is that small teams gain independence of action, enabling them to work and experiment on more manageable parts of the problem in parallel and more quickly and safely, with lower costs of coordination.

vi. Linearization: Partitions operations that are complex and share resources to accomplish multiple objectives into independent (decoupled) and coherent workflows. Each is focused on one or a few objectives that can happen in parallel. Coherence is achieved by committing all resources needed to generate outputs to workflows and sequencing them in the order that work needs to be performed. Partitioning across workflows is achieved by preventing the sharing of resources between them. Similarly, partitioning within workflows is achieved by defining handoffs between steps. The benefit of both types of partitioning is creating independence of action (decoupling), which contains disruptions during performance and makes improvements during planning and practice easier to do.

vii. Figure 7.2 The Three Techniques of Simplification

viii. cognitive load as “the total amount of mental effort being used in the working memory.” 2 He observed that if the cognitive load of a task is too high, it can hinder learning and burden our cognitive capacity.

ix. Multitasking is another source of cognitive load. Studies have shown that multitasking degrades the performance of completing even simple tasks, such as sorting geometric shapes.

x. As the number of projects went up, the time spent on productive tasks (e.g., problem-solving, interpreting data) went down by more than half, from 70% or more of their time to about 30%. The increased nonproductive activities included status meetings (communicating and coordinating across teams), switching costs (time required to reestablish context from one project to another), and so forth. 4 Wheelwright concluded, “If an engineer was on one major project and one smaller project, they not only were working on productive tasks 70%–75% of the time, but they felt much better about their work and their role in the company.” 5

xi. Instead, agile software development takes a different approach. Rather than “everything all at once through design, development, testing, and delivery,” the idea is to iteratively design, develop, test, and deliver to the user in small increments, ensuring the amount of newly added novelty remains small. This informs the next iteration of design, development, testing, and delivery, as well as adds to the ever-growing base of validated understanding. 14

xii. Figure 7.3 Contrasting Waterfall Approaches with Incremental (Agile) Ones

xiii. Modularization is the act of partitioning large, highly integrated situations into smaller, simpler, more manageable pieces.

xiv. Modularization, like incrementalization, makes the problems themselves easier to solve. Partitioning a large system into smaller and coherent components means each component is simpler, making it easier to manage, understand, and experiment with.

xv. It is important to note here that the leader has the Layer 3 responsibility to balance independence of action with ensuring enough compatibility that all the components integrate into a cohesive whole.

xvi. Linearization The last technique of simplification is linearization, which partitions problem-solving within sequential workflows. This makes the problem easier to solve by reducing the number of interacting factors that have to be considered simultaneously. It also reduces the number of people whose creative collaboration has to be coordinated.

xvii. Linearization has four elements: •Sequentialization: All system outputs are generated along the single, dedicated, non-looping pathway of connected activities.¶ This is how system outputs take form (e.g.,

products, services, or information), from the start through the finish of their generation to their delivery.** •Standardization: This is comprised of (1) the explicit and prespecified definition of what a subsystem is meant to deliver in terms of the output it is meant to generate, (2) the sequence of steps to be performed to generate that output (the pathway), (3) the nature of the exchanges or handoffs over the connections linking one step to the next, and (4) the methods by which work is done at each individual activity.†† •Stabilization:‡‡ Triggers are built into outputs, pathways, connections, and activities so when a surprise inevitably arises (because of delays, defects, difficulties, etc.), the surprise (i.e., problem) is seen and resources (especially people's time and attention) are swarmed onto the problem. This is to contain the problem, so its duration is curtailed and its ability to escape and have systemic effects is diminished.§§ •Self-synchronization: The production system can automatically self-pace without elaborate scheduling systems.

xviii. Standardization makes clear what is exchanged one step to the next and makes signaling possible when intermediate inputs are needed and outputs are done. Stabilization ensures that surprises, one step to the next, are minimized.

xix. Skinner explained that the superior plants had leaders who had chosen to create "factories within factories."

xx. A Theory Overview Decoupling and sequentialization made it easier to create alignment around objectives, create more opportunities to build competency around relevant tasks, and so forth. That made standardization around specialization easier too.

xxi. Dr. Eliyahu Goldratt and Jeff Cox's book The Goal depends on linearized processes to find and remove bottlenecks that inhibit process flow to increase productivity, as well as reduce the information process requirements. 23 A key insight was that managing how work was performed at the bottleneck was much simpler and more effective than scheduling the entire factory.

xxii. model lines as platforms in which new ideas can be tested and generated, new capabilities can be developed, and the appropriate new social circuitry can be wired.

xxiii. 3. Take a look at some sample flows of work in your organization, diagramming where ideas, information, materials, and the like travel as they get from where they are generated to where they are next needed. Do those flows look like spaghetti on a plate? Or do those flows require permissions going up one function before being passed over to the top of another before they flow back down to the place of work? If you answered the latter, you've created opportunities for impedance, congestion, misdirection, turbulence, and the like, and linearizing those flows with more direct connections is likely to help.

b. Chapter 8: Simplification: Case Studies in Incrementalization, Modularization, and Linearization

i. simplification partitions systems so smaller problems are decoupled from each other.

ii. The Wrights used incrementalization to break the big problem of heavier-than-air flight into smaller component pieces. Then, they quickly advanced their understanding bit by bit. Each step supported each subsequent step of inquiry. They believed they couldn't think their way to the right answer; instead, they experimented relentlessly with great frequency and at low cost.

iii. Figure 8.2 Comparing Langley's "All at Once" Experiment (left) with the Wright Brothers' Incremental Experimentation (right)

iv. Breaking large problems into smaller pieces, around which it is easier to experiment and learn, is a common feature of some great achievements.

v. Simplification by Modularization

vi. The second technique of simplification is modularization, which simplifies problems by partitioning large, complex systems (which have highly intertwined interdependencies) into systems that are more modular. Within this structure, each module has clearly defined boundaries and established conventions for interactions with other modules.

vii. They didn't taking advantage of operating-edge understanding of contextual issues, and they allowed only a few to make creative contributions, without the benefit of that contextual understanding.

viii. Bezos described how he wanted all new hires to be "doers—engineers, developers, perhaps merchandise buyers, but not managers." 42 In other words, he wanted people to be able to spend their time working in Layers 1 and 2 as opposed to coordinating in Layer 3.

ix. "two-pizza teams"—teams with fewer than ten people (the most that could be reasonably fed by two pizzas). These teams "could be independently set loose on Amazon's biggest problems." 43 Bezos wanted teams to "figure out a way… to communicate less with each other, not more." 44 In effect, he realized that for Layer 3 processes to enable people to use their ingenuity well, Layer 1 and Layer 2 systems had to be designed in such a way that working in small, coherent teams was possible.

x. •All teams will henceforth expose their data and functionality through service interfaces. •Teams must communicate with each other through these interfaces. •There will be no other form of interprocess communication allowed. •Anyone who doesn't do this will be fired.

xi. But beware. It is possible to over partition systems. In software engineering, teams have sometimes overly modularized their system to

the point where modules are no longer coherent units. As a result, to get something meaningful done requires coordinating across many teams.

xii. Simplification by Linearization The final technique within simplification is linearization, which simplifies processes by directly connecting people who need to collaborate, so they don't have to communicate up and down through siloed functions, thereby losing frequency, speed, and detail in their communications and collaborations.

xiii. The leaders recognized this conundrum and put in a stabilization mechanism: they assigned only enough work to account for 85% of their colleagues' time. This gave everyone some slack to deal with unexpected challenges. In addition, leaders stopped assigning themselves hands-on (bench top) work, so they could lend their own minds and hands to resolving especially hard problems.

xiv. There's one last point. Earlier, we made the case that model lines create opportunities to test ideas and build capabilities on a small scale. The opportunity to learn through fast, frequent feedback from experiences that are nondisruptive to the larger enterprise creates that latitude. Once built, there's a chance for those who've created competency to fan it out.

xv. Simplification highlights how leaders can manage the conditions in which people are operating, so solving problems—particularly complex ones—is quicker, easier, and more productive. Simplification moves people in the direction of the winning zone via the following:

xvi. •Easier experiments: Simplification creates opportunities to solve smaller problems; experimentation is quicker, easier, and cheaper. •Easier learning from experience and experiments: Through simplification, sense-making becomes easier (e.g., action-and-outcome, cause-and-effect, action-reaction) because the situations are simpler, with fewer factors in play that have less intertwined relationships. •More experiments: Simplification enables more frequent iterations, happening either in parallel (through modularization) or within sequential processes (through linearization), which require teams performing the experiment to be a coherent whole (through incrementalization). •Distributed learning across the enterprise: Simplification allows problem-solving to occur in parallel because of partitioning, multiple experiments occurring in parallel, or partitioning of linear workflows by creating standards and stabilization.

c. Chapter 9: Simplification: Exemplar Case Study and Further Examination

i. But then, the Soviets lost their lead. They didn't achieve a docking until 1969, years after the Gemini accomplished that in 1965. And it wasn't until 1970 that they were achieving long-duration flights in Earth orbit, by

which time the Apollo program had been to the moon and back more than once. They had taken a different, non-incremental path to space. The Soviets had fewer learning cycles, each of which required more to be learned. This may be part of the reason why the Soviet's head start soon dissipated.

ii. This also clarified where their work fit into the larger enterprise. People explicitly knew how their work connected with the other systems on which it depended and which depended on it. In that regard, NASA created connections between component parts and the people working on them,

iii. As we've discussed, it is important to take large problems and break them into smaller, self-contained pieces. This partitioning means fewer people have to coordinate their efforts to solve problems collaboratively, and more problems can be solved in parallel. However, that does raise the issue: How do partitioned pieces interact productively without compromising local functionality, let alone the system as a whole?

iv. Isomorphism is the quality of related items having similar structures. Design requires isomorphism between Layers 1 and 3§ (between the technology and the social circuitry). Production requires isomorphism in all three layers.

v. Table 9.1 Leadership Challenges with All-At-Once vs. Incremental Approaches

vi. Figure 9.4 Top-Down vs. Center-Out Leadership

vii. Table 9.2 Comparing Top-Down vs. Center-Out Leadership

viii. Wrapping Up Simplification The very best performers succeed because they create the conditions in which people's minds can be used more effectively to solve Layer 1 and Layer 2 problems, the solutions to which enable organizations to fulfill their missions. To accomplish this, leaders must wire the social circuitry that integrates individual effort gracefully into collective effort, so people exert less time and energy on Layer 3 problems.

6. Week 4, 4/24/24, Part 4 - Amplification (Chapter 10)

a. Chapter 10: Amplification: A Theory Overview and Exemplar Case Study

i. Regardless of the reasons, Southwest's leadership did not respond sufficiently to these earlier indications about its operational fragility and resilience.

ii. In December 2022, Southwest's crew scheduling system couldn't keep pace with the rate at which flight crews were trying to provide updates. However, nonresponsiveness to indications of problems and inadequate feedback loops had been characteristic for long periods, not just during day-to-day performance but also during planning.

iii. Southwest crew scheduling system couldn't generate a schedule for planes and crews (the Layer 1 technical object that people were trying to generate and update) accurately or quickly enough. The Southwest staff trying to generate those schedules were hampered by the crew scheduling system (Layer 2 technology) that was inadequate for the task (e.g., telephone calls instead of a mobile phone app). Despite the heroic efforts Southwest employees made with their processes and procedures (Layer 3), these efforts fell far short of compensating for the inadequacies of the technology (Layer 2) given the danger zone conditions of fast-moving extremes delivered by Winter Storm Elliott (Table 10.1 outlines this more).

iv. Earlier, we described slowification, where we advocated that the toughest problems be solved in the right conditions, as well as simplification, where we advocated that the problems themselves be modified so they are easier to solve, which also makes those systems easier to control. Now we look at the final mechanism to help you wire your organization to win. Amplification is the act of calling out problems loudly and consistently enough so help is triggered to swarm them.

v. Figure 10.4 Amplification of Problems through Feedback Loop

vi. For control systems to be effective, the generation, transmission, reception, and reaction to signals must keep pace with the changes going on in and around the system being controlled.

vii. "A Mathematical Theory of Communication." It focuses on the problem of how a sender must encode signals so that they can be understood by the receivers. 13 Even if a control system is complete (i.e., it has mechanisms for generation, transmission, reception, and reaction), it can fail because of delays and imprecision. 14

viii. The idea is that to change a course of action, a person or system has to observe what is going on (e.g., collect data and information), get oriented (e.g., make sense or otherwise interpret what the data means), decide what to do based on that sense-making, and then act on what has been decided.

ix. In general, one wants to have a fast OODA loop; that is, one can rapidly and effectively respond to changing conditions.

x. We need signals to be generated when we encounter problems in Layer 1 (the work in front of us) or in Layer 2 (the tooling and instrumentation through which we work). The causes and corrective actions for these problem might be expressed as issues of technology or techniques. However, for Layer 3 problems (problems with our social circuitry), causes and corrective actions affect processes, policies, procedures, and routines—the ways by which the work of many individuals is integrated through collective action toward a common purpose. Our Layer 3 processes and procedures (our social circuitry) must integrate

signaling—so that they are generated, sent, received, and effectively reacted to—into our processes and procedures.

xi. Figure 10.5 Using Amplification to Move from the Danger Zone to the Winning Zone

xii. By doing this, we will show how amplification was either effective or ineffective through the presence or absence of these six steps of amplification: 1. Sender generates signal. 2. Sender transmits signal. 3. Receiver receives signal. 4. Corrective reaction is started. 5. Corrective reaction is completed. 6. Sender confirms that reported problem has been solved, otherwise they send another signal.

xiii. If you create conditions in which feedback loops work well, you are likely to generate wonderful outcomes for both the people in the organization and the people they serve. On the other hand, if you create conditions in which feedback loops don't work well, you are likely to generate disappointing outcomes for both the people in the organization and the people they serve.

xiv. This pattern of perform-problem-pause-(re) plan-new practice is modeled directly on Toyota's andon cord. How such andon cords are deployed illustrates the characteristics of well-amplified feedback versus not.

xv. Pancotto found that in the best plant, mechanics pulled the cord twelve times a shift. Also, there were enough capable team leaders to consistently provide help. In the other plant, mechanics hardly ever pulled the andon cord because there were far too few team leaders to respond reliably, and on the chance they did, the reaction was often accusatory, not supportive.

xvi. In the first plant, the feedback loop was frequent (more than once an hour), fast (immediate reaction by the team leader), detailed, and accurate (responding to each particular associate one by one about specific problems and supportive of incredible industrial effectiveness). In the other, plant the feedback loop was infrequent, slow, and imprecise. The plant's overall performance was consistent with individuals' experiences.

xvii. Factors That Help or Hinder Amplification

xviii. (1) Factors Affecting Signal Generation When people point out problems that are never fixed, or help is requested but never arrives, people can become indifferent to them. They accept problems as normal and resort to daily workarounds and just "make do." People can become desensitized. They no longer see problems as something they can do anything about. They don't call out problems when they are seen.

xix. what signals are generated or not generated. Leaders can set expectations for everyone to strive to achieve perfect understanding and performance of the system, calling out anomalies and things they don't understand. Or they can do the opposite. Through their actions or words,

they can encourage everyone to “go with the flow” and can ignore imperfections in the system and their own understanding. They ignore everyone’s talents, experiences, ingenuity, and creativity, making them passive participants in the system. By doing this, leaders are complicit in the dismal outcomes that follow.

xx. (2) Factors Affecting Signal Transmission

xxi. Respondents were asked to what extent their organization had high cooperation, that people were “trained to tell bad news,” that risks were shared, that bridging between functional groups was encouraged, that failures lead to genuine inquiry, and that novelty was encouraged. Organizations that rated highly on these characteristics performed better on every technical performance measure (as measured by code-deployment frequency, code-deployment lead times, change failure rates, and mean time to restore service) often by orders of magnitude.

xxii. This was part of a research initiative, called Project Aristotle, that wanted to find what made teams effective at Google. They studied 180 teams, reviewing a combination of attributes and dynamics, and found that the interactions between team members mattered more than who was on the team. The top predictor was psychological safety.

xxiii. “Communication is not about speaking what we think. It’s about ensuring others hear what we mean.”

xxiv. The lesson here is that leaders must understand the nature of what signals need to be communicated. This may dictate who does the sending and receiving to enable the necessary coherence.

xxv. (4) Factors Affecting Corrective Action Beginning

xxvi. Another failure mode is when signals for help are received but no actions are taken in response.

xxvii. Another danger is that the signals arrive too late to enable effective corrective action.

xxviii. As mentioned, the State of DevOps research showed that one of the top predictors of performance in technology environments is to what extent important information can be shared, how messengers of bad news are trained to tell bad news, how responsibilities are shared across functional specialties, how bridging between teams is rewarded, and how failure causes genuine inquiry.††

xxix. (6) Factors Affecting Corrective Action Validation

xxx. Corrective action and validation form one of the key parts of the Plan-Do-Study-Act cycle, from Dr. W. Edwards Deming. •Plan: the conceptualization of new ideas and actions to rectify or improve a situation. •Do: the substantiation of those ideas in action. •Study: the deliberate and rigorous assessment of what had happened versus what was expected and an attempt to explain causally the reasons for those

inaccuracies. •Act: the new behaviors informed by what was discovered during study; the validation and correction part of the feedback loop.

xxxi. Keeping suppliers nearby reflects Toyota's policy of "global localization": in other words, building where it sells and buying where it builds.

xxxii. Amplification and feedback loops make this possible—from those closest to the work to those with responsibility over ever greater spans of the enterprise. At TMMTX, for example, for every four or so associates doing the direct work of fastening, installing, or attaching material, there's a team leader providing them with support (and for every five or so team leaders, there's a group leader who provides support to them).

xxxiii. organizations must do more than simply invert their structure. Stabilizing support is necessary, even in a system that is arguably one of the best engineered in the world. The ratios of people supported to people supporting are small, a few associates per team leader, a few team leaders in a group, and so on. This might seem contrary to what some might wrongly think of (i.e., industrial operations being easily codifiable or "push and play"). Recall how even Gene and Steve moving a couch has a substantial brain element to it.

xxxiv. Figure 10.8 Leadership to Supporting Ratios at Toyota Plant

xxxv. The right ratio is determined by whether amplification is working; that is, if problems are being seen often and early enough and solved quickly and reliably enough that their like those at TMMTX. These leaders are able to appreciate, understand, and support the work being done in Layers 1 and 2, take the effort to make that work quicker, and make it easier for that work to be safer and better.

xxxvi. Critical to amplification are (1) the ease of generating and transmitting signals that something is amiss and (2) the act of those signals being received and reacted to quickly. In performance, it's a significant stabilization mechanism. In planning and practice, amplification within the nested modularization of teams and groups allows for significant independence of action in improvement.

xxxvii. Contrast this with the common practice of stripping out middle management for cost savings, which has negative consequences by depleting the systemic ability to see and solve problems.

xxxviii. Part of wiring an organization to win is to ensure that leaders at all levels are able to create conditions in which people can give the fullest expression to their problem-solving potential, both individually and through collective action toward a common purpose.

7. Week 5, 5/1/24, Conclusion, Appendix A, Appendix B
8. Week 6, 5/8/24, Author Q&A