Slowing Down Time in Organizations

How Organizational Structure and Functional Teams Influence the Ability to Adapt

How is it that organizations spend so much time on mission, vision, and culture, yet most employees experience chaos in the day-to-day environment? How can network theory help us gain a fresh perspective on our everyday personal and organizational realities? This paper will attempt to address two organizational behemoths: structure and team culture. Said differently, we'll try to illustrate how to slow down time in organizations and then how to capitalize on it. Buckle up, it's about to get nerdy.

Network theory and time dilation

At NZS, we're somewhat obsessed by the idea of time dilation. More specifically, how can we slow down time compared to everyone else running around as if their hair is on fire? To quote from our prior paper, Redefining Margin of Safety, that similarly concerned itself with time dilation: *"In physics, Einstein discovered two ways to think about time dilation. The first way is described by Special Relativity: as objects move at higher speeds, their 'clocks' will appear to run slower to outside observers. Second, in General Relativity, your 'clock' will run slower as you approach large masses (black holes being an extreme example). In fact, since your feet are closer to Earth than your head, they are actually younger than your brain, which is less affected by our planet's gravity. Luckily, the effects are negligible at these scales!"*

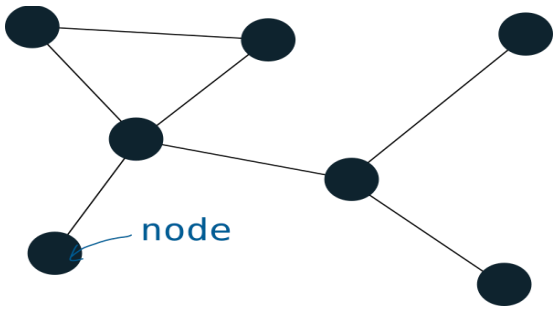
In Redefining Margin of Safety, we talked about a relentless focus on the customer and innovation, which leads to an increased ability to adapt. Such nimble companies can thoughtfully and strategically operate in a time-dilated bubble compared to the frantic, frazzled pace of the world around them. We conclude that adaptability is the new margin of safety in a world increasingly driven by a heightened pace of change. To complement that fundamentally outward-looking paper, **herein we shift the perspective inward and address two unsung heroes of time dilation: structure and team dynamics.**

When we experience friction or bad behavior in an organization, we often go straight to blaming someone or some group of people we perceive to be bad actors. **More often though, bad behavior is just a symptom of the wrong structure. Moreover, by implementing a**

high-functioning structure, you can create an ideal environment in which productive team culture can flourish. Fortunately, by understanding three straightforward levers that govern all networks, we can reduce friction and increase organizational productivity, thus decelerating the game clock and increasing the probability for successful outcomes.

The three levers of a network:

1) **The number of nodes** (the number of people, or strategies, in the system):

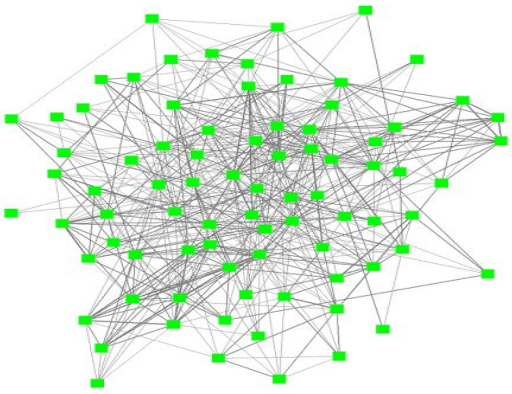


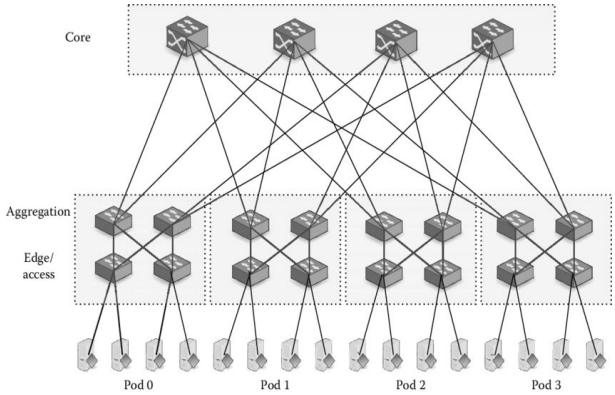
2) **Style bias** (narrow or wide set of concepts, products, services, etc.):
   a) Here's an example of two search pages circa 2005. Their market share in search was approximately the same back then. . .

info@nzscapital.com

b) Below are the menus for In-N-Out Burger and Wendy's, which exhibit narrow and wide style bias, respectively.

3) **Network connection structure** (dense or hierarchical):





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Networks scale exponentially

Before mapping the human genome, scientists estimated that humans had around 100,000 genes. We already knew the roundworm had 19,000 genes, so ~5x seemed a reasonable guess given the orders-of-magnitude greater complexity of a human relative to a roundworm. Scientists were shocked to learn that humans have only around 30,000 genes.[1] This number (only ~1.5x) makes more sense when we understand the nonlinear nature of networks. "*The first important fact about Boolean networks is that the number of states a network can be in scales exponentially with the number of nodes. A network with 2 nodes can be in four or 2^2, a network with 3 can be in eight or 2^3."* Thus, **the potential for novelty in biology – or creativity in an organization – increases as an exponential function to the number of nodes in the network.**

This exponential increase in possible states relative to the size of the network acts as a double-edged sword: with increased network complexity comes a greater potential for innovation; however, because the number of interdependencies (node connections) grows faster than the network itself, positive changes in one part of the network are likely to result in chaos or other negative effects elsewhere in the network. **In other words, as we increase network size, we get more innovation AND more potential for dysfunction owing to the extreme interconnectedness of the network.** We often see this scenario play out as subtraction through addition. And, when an organization attempts to prevent the ripple-like spread of changes, an increased (and often crippling) burden of bureaucracy is the likely result.

Balancing the two opposing forces of innovation and bureaucracy can be achieved through appropriate network structure, i.e., by limiting the possible range of outcomes through narrowing style bias and/or strategically reducing the density of connections. For example, the network can be governed in a central manner (e.g., a strong CEO or dictator), which places constraints on the possible decisions that can be made by any one individual or team lower in the hierarchy. This acts to narrow style bias. Alternatively (or additionally), the network can be optimized by creating autonomous units within the network that have limited contact with other units (small hierarchical networks embedded within the broader network). We see both types of networks, alone or in combination, in many public companies. Berkshire Hathaway, for example, has a strong set of governing principles to which each of its companies adhere, and the companies themselves have very little contact with one another.

Optimizing network structure

As it turns out, there are only three possible structures that form functional, healthy companies that can slow down time. Understanding the key drivers of network theory, combined with several decades of researching companies around the world, have made it clear

[1] Eric Beinhocker, The *Origin of Wealth* (Harvard Business School Press), p. 148

to us that successful companies, either intuitively or explicitly, are structured in one of three ways. We walk through these options here and illustrate how these structures align with theory in the subsequent chart:

1. Small companies (or autonomous units) have few nodes by default. They can theoretically handle either a narrow or wide style bias and remain densely connected. However, there is certainly a limit to how much multitasking a small group can successfully accomplish, thus limiting the scope of style bias without addition of more autonomous units (and edging into "larger company" territory).

2. Larger companies have many nodes by default. If a business depends on a narrow style bias, as with Apple or Pixar, then it MUST limit hierarchy to maintain dense connections between nodes and foster creativity.

3. If a larger company's business depends on a wide style bias, such as a catalog business like Texas Instruments or Amphenol, then it MUST be hierarchical and form autonomous units to avoid chaos. In essence, this type of company operates as a loose conglomeration of small organizations, each with a disparate, narrow style bias (per option 1). "Playbooks", or overarching company philosophies, serve to narrow the operational boundaries within which these disparate companies operate, so that the culture is carried throughout the distributed/decentralized network.

Regardless of how many nodes there are, there is only ONE kind of network that reduces friction: dense connections around a narrow style. A hierarchical network around a wide style bias just serves to break up the styles so that the individual teams can have dense connections around a more limited offering of products/services.

Three Network Structures that Slow Down Time		Nodes		Style Bias		Connections		
		Few	Many	Narrow	Wide	Hierarchy	Dense	
1	**Small organizations with few products**							NZS Capital, Basecamp
2	**Larger companies with few products**							Apple, Pixar
3	**Larger companies with many different products**							Amphenol, TI

defined state
not applicable
lower friction
higher friction

Option 1: Few nodes, narrow style bias, dense connections | NZS Capital, Basecamp

We at NZS Capital are a small group of investors (i.e., a network with a small number of nodes). Although all of us look at the world differently, which is an essential trait for maximizing insight and creativity, we all embrace the same investment philosophy (a narrow style bias) as detailed in Complexity Investing. We have intentionally eliminated hierarchy to keep the team flat – everyone has the same title: Investor. There are no "special voting privileges" on the team. As such, we have dense, rather than hierarchical, network connections.

When we're debating the merits of an idea, this high connection density is essential. We become intentionally critical of both the idea and any bias that might have crept into the research process, which requires an equitable, roundtable relationship and, most importantly, trust (discussed further in the subsequent "From structure to teams" section). However, just because a network is densely connected doesn't mean those connections must be in constant contact. Indeed, when we are pursuing and nurturing investment ideas, we keep connection density low to maximize independent thought and time available for research.[2]

At NZS we're often asked, "How can a small team of investors possibly do the depth of work a bigger team in a larger organization can do?" We always answer the same way: "If you only had two meetings per week, never had to worry about office politics, AND worked on a team only trying to do one thing, how much extra time would YOU have?" Our guess (for most organizations) would be around 20 hours per week. Imagine what else we can do with that much extra time!

A fair criticism, however, would be: "How can a small team of investors possibly foster as many innovative ideas as a large group of investors?" The honest answer is that our potential for *organic* innovation is lower. Thankfully, this matters less than ever before in the Digital Age of

[2] At least one of our two meetings per week (and sometimes both) revolves around new stock ideas for the portfolio. We have found that when the team talks about a stock prematurely before the idea is formally reviewed in a team meeting, then, all too often, everyone arrives at the meeting with their mind already made up. The potential for energetic, open debate has been deflated. What results is often a passionate defending of bias where:

1) The most senior person wins
2) The best debater wins
3) Everyone already agrees with each other and there is no debate.

None of these outcomes are optimal for the client. So, we intentionally limit the interaction of team members as they work on new ideas for the portfolio. When we grab coffee together, we don't talk about what we're working on. We save that for the idea debate. Debate marks a critical step in our research process – it's where bias between individuals can best be seen and eliminated. We've discovered this structure encourages the best ideas to rise to the top for inclusion in the portfolio, so everyone – investors, team, and clients – wins.

the internet. Because we all have access to our own curated network outside of NZS, AND we have the time to interact with that network, our potential for innovation remains quite high.

Basecamp, an online software company, is another example of a small network with narrow style bias and dense connections. As most businesses enlarge their customer base, they end up adding employees and changing the structure of the business. However, as Basecamp (formerly 37Signals) has demonstrated, it is possible to scale and NOT meaningfully change the business in the Information Age. Their flagship product, Ruby on Rails, has scaled from 14,000 accounts in 2005 to over 3.5 million accounts in 2021 (sites such as Twitter, Github, and Shopify all run on Ruby on Rails). This exponential growth has been accomplished while their current employee base remains at just over fifty. Fortunately, the founders of Basecamp have shared exactly how they accomplished expansion of their customer base without altering company structure or culture through several best-selling books, as well as their insightful blog and podcast. Like NZS, they have found that sharing, not moat building, offers the best path to success in the Information Age. The secret to keeping Basecamp small is the same as for Rails' success: a dogged pursuit of simplification (narrowing style bias).

Option 2: Many nodes, narrow style bias, dense connections | Apple, Pixar

Apple offers another glimpse of a low-friction network. They have successfully scaled the most valuable company in the world through a relentless focus on narrowing the style bias. Tim Cook loves to point out that all of their products can easily fit on a coffee table. Even Apple's two operating systems, macOS and iOS, continue to converge into the same thing. Steve Jobs understood the concept of high-functioning structure through narrow style bias intimately. When he returned to the company in 1997, he wasted no time in cutting almost 70% of the company's product offerings, including printers, cameras, and even the Newton. Everyone knows what Apple stands for now: simple devices that provide an easy-to-use, high-quality digital experience. The narrowness of their style enables extreme scale while maintaining connection density across larger parts of the organization, which, in turn, allows for higher levels of creativity across their 150,000 employees. Even their headquarters has been built to encourage ad hoc interaction. It looks surprisingly like the image of a densely connected network!

Pixar marks another wildly successful company that has chosen the structure of many nodes, narrow style bias, and dense connections (and an interesting glimpse into how Jobs viewed company structure). They have made many different genres of movies with a powerhouse of creative directors, AND they invented the technology to actually bring the movies to life. But when we think about a Pixar movie, similarities spring to mind: imaginative storytelling, characters with depth, phenomenal animation, and risk-taking (WALL-E begins with 39 dialogue-free minutes!). In this structure, creativity is the highest priority, and it is typically championed by a creative figurehead such as Steve Jobs, John Lasseter, or Jony Ive.

Option 3: Many nodes, wide style bias, hierarchical connections | Amphenol, Texas Instruments

While not as well known, Amphenol offers an example of a company with many nodes, a wide style bias, and many autonomous teams operating in a decentralized environment. Amphenol is the #2 and quickest growing player in the >$100 billion connector and sensor market. They employ about 75,000 people across approximately 100 smaller companies, which are allowed to operate with high degrees of autonomy. These companies report to one of seven division heads and are run by a small corporate office. Through enabling autonomous units (which even periodically compete with each other for business), Amphenol can maintain a wide style bias (offering a broad range of solutions across disparate end markets) while growing the number of smaller companies in their network.

Texas Instruments provides another example of a highly functional company with many nodes, a wide style bias, and hierarchy in the form of autonomous business units. TI depends on a wide style bias as a key business advantage. They have a catalog of around 100,000 parts that go into almost everything with electronics. Internally, TI operates as 65 autonomous companies, each with their own financials. The smaller internal companies operate from a common “playbook” of key performance indicators, expectations, and best practices, which serves to narrow the style bias from an operating perspective. The management team of TI views it as

their responsibility not to operate these smaller companies, but to allocate capital to the most promising opportunities brought by each company and to ensure that the culture of TI is promoted across these companies through proper incentive structures. **This marks a key trait of management teams in large healthy organizations – they pick competent people to manage key businesses and view themselves primarily as capital allocators and cultural leaders, not day-to-day operators.**[3]

Porting best practices

An efficient way to accelerate performance of autonomous units within a network is via a small, centralized team recognizing, and then transferring, best practices from select teams to others. Cell function offers a good analogy for this type of behavior: healthy cells quickly pass information to other cells to strengthen the overall organism. TI does this through common "playbooks". Apple does this with a strong, creative visionary like Jobs or Ive. At one point, Amphenol acquired a small company that developed a superior mating technology for connectors. The centralized management team quickly introduced that technology to all of the other teams within the company and the innovation of one team catapulted the progress of the entire company. In this way, innovation can be passed through the company without the potential negative effects of larger networks.

Freedom to fail

In healthy companies, we find a culture that supports the freedom to fail. Does anyone remember the Fire phone? It proved such a failure that it has turned into a trivia question, akin to the Newton. Who knows Alexa? Well, everyone. The same team that failed with the Fire phone ultimately turned that failure into the raging success of the Alexa family of devices. By encouraging risk-taking and seeing the opportunities in – rather than punishing – failure, healthy companies will allow teams a surprising amount of autonomy to pursue unique products.

[3] In his book, *The Ride of a Lifetime*, Bob Iger talks about the ability to decentralize decision making and allocate capital to the most promising ideas as a key factor that allowed him to pull Disney out of the ditch after he inherited the company from Michael Eisner. Iger learned these lessons from his previous bosses, Tom Murphy and Dan Burke, the duo Warren Buffet called "probably the greatest two-person combination in management that the world has ever seen or maybe ever will see." Before Iger, Disney relied on a comprehensive, cumbersome process of centralized strategic planning. Iger dismantled the strategic planning team during his first two weeks as CEO and called it "the most significant accomplishment" of his early tenure. Much has been written over the years about the failure of centralized strategic planning in wide-style-bias companies; this paper offers a glimpse into the theory underpinning the failure of this strategy.

Predicting network behavior

By understanding the three levers that govern networks (number of nodes, style bias, and connection structure) we can begin to predict outcomes. Networks are easiest to navigate when the number of nodes remains small. However, a growing network with a widening style bias that tries to maintain dense connectivity becomes a recipe for chaos and frustration. Employees will often wax nostalgic about how much better life was before the company grew. **As a company or organism grows, its response to these three levers must become more deliberate to keep entropy at bay.**[4]

Many densely-connected nodes and a widening style bias can be a red flag for a company that's losing its way. Indeed, this is exactly the kind of company Steve Jobs inherited from Gil Amelio in 1997. Gil knew that Apple remained full of creative people, but he had no idea how to unleash that creativity. Instead, he famously offered this nonsensical analogy: *"That ship is loaded with treasure, but there's a hole in the ship. And my job is to get everyone to row in the same direction."* But Jobs knew what to do. He came back, narrowed the

[4] For example, an investment company might choose a centralized research model serving many different styles. But, remember #3 in our chart: many nodes → wide style bias = hierarchy. So, if we choose dense connections (i.e., centralized research), then we must tighten the style bias or brace ourselves for chaos!

We can predict the behavior of a many-node, wide-style-bias, densely-connected network for an investment firm. If we draw the structure of the (by definition) non-autonomous units, the obvious points of highest friction (nodes with most disparate connections) are the sector team leaders. Owing to their increased job burden, we might predict that they would churn out of the network at some materially higher rate than either analysts or portfolio managers.

We could also advance a hypothesis about the behavior of participants inside the system. The portfolio managers don't have direct control of the analysts and, while the sector team leaders help determine bonuses, they do so in accordance with the portfolio managers' consensus voting system and attribution analysis. Consensus and attribution systems incent bad behavior, as the loudest portfolio manager is more likely to get their style covered in more depth. Further, attribution can cause analyst in-fighting over getting their ideas into a portfolio (which is highly counterproductive to building trust). This type of system can transform well-intentioned people into poorly behaving individuals as the many participants demand accountability without authority.

style bias by cutting products, and re-focused employees away from mindless rowing to actually patching the hole!

As an alternative to narrowing style bias, a company with many nodes and products could divide into smaller units, defined by tight operational guardrails, to avoid succumbing to the friction and chaos of increased size and bureaucracy. If such a company were to instead maintain the status quo, their progress would rapidly erode. Indeed, history is replete with the IBMs and Oracles of the world. We often blame disruption for their growing irrelevance; however, a high-friction structure, resulting from a management team that does not understand how to scale the business and adapt to an ever-changing environment, should take part of the blame as well.

From structure to team

An organization MUST get structure right in order to hope to develop effective teams. Otherwise, with the stability of the firm in constant jeopardy, there will be too much friction to focus on high performance at the team level. **Often, organizational frustration from bad structure develops the knock-on effect of deteriorating culture – a one-two punch for organizations that have lost their way.** However, once functional structure has been established, according to the straight-forward rules outlined here, then we can begin to think about how to nurture the development of effective teams.

So, assuming we have structured the organization to slow down time, then how does a team cultivate an environment or culture where energetic, open debate can thrive and not devolve into hurt feelings and status seeking? How can we capitalize on the time that we've created through a functional structure?

The two-pizza rule and psychological safety

Amazon has found a shortcut for what we're trying to say: the two-pizza rule. Bezos enforces a simple rule for team meetings – the group should be no larger than what two pizzas can feed. A group of 5-8 people is small enough for everyone to be heard and big enough to enable a diversity of ideas. Google takes it a step further by identifying the magic ingredient that most tightly correlates with successful outcomes for two-pizza groups: **psychological safety.**

> The safer team members feel with one another, the more likely they are to admit mistakes, to partner, and to take on new roles. And it affects pretty much every important dimension we look at for employees. Individuals on teams with higher psychological safety are less likely to leave Google, they're more likely to harness the

power of diverse ideas from their teammates, they bring in more revenue, and they're rated as effective twice as often by executives.[5]

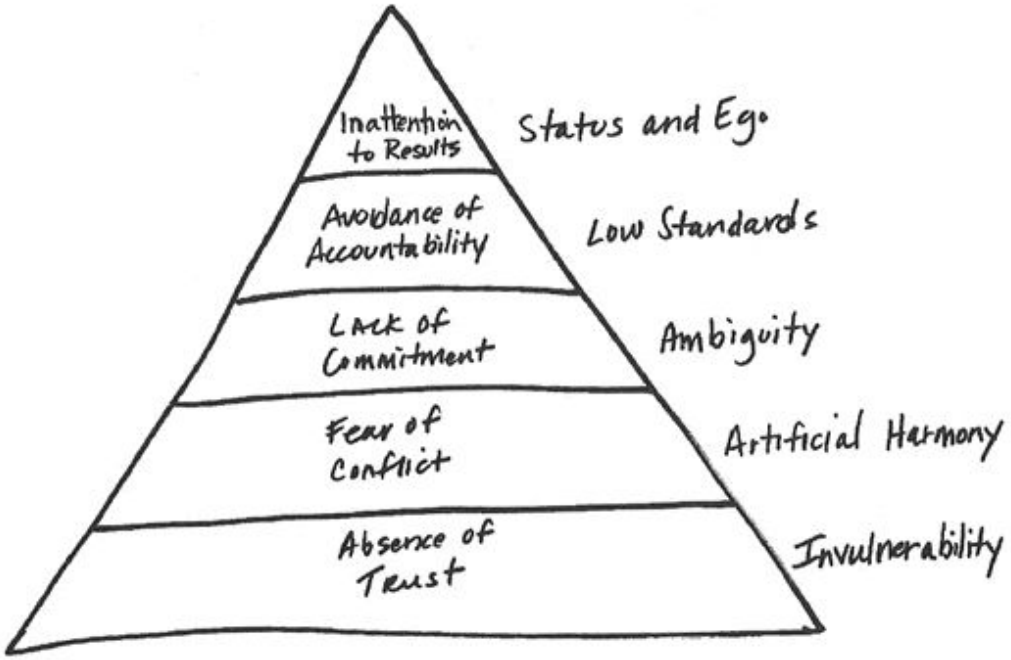
Vulnerability

Can we use the word vulnerability in the same sentence as work? Professor and author Brené Brown has spent decades studying vulnerability, and she thinks we can. Her TED talk, "The Power of Vulnerability", has been viewed over 52 million times. She's not a head shrink, she's a data scientist. *"Vulnerability is the birthplace of innovation, creativity, and change",* Brené says. *"If you've created a work culture where vulnerability isn't okay, you've also created a culture where innovation and creativity aren't okay."*

It all boils down to a foundation of trust

Brené Brown calls it vulnerability. Google termed it psychological safety. The Navy SEALs call it ownership.[6] It's all the same thing: TRUST.

In his book, *The Five Dysfunctions of a Team*, Patrick Lencioni offers this helpful diagram:



[5] https://rework.withgoogle.com/blog/five-keys-to-a-successful-google-team/
[6] https://www.youtube.com/watch?v=Ijqra3BcqWM

Like Pirsig's Quality, trust can be difficult to define, but we all instinctively know what it ***feels*** like when there is trust in a team and when it's absent. And, like Quality, trust just doesn't magically happen. Rather, trust is the product of deliberate intention, agreed-upon rules among team members, and lots of practice. Trust is also asymmetric – it can take seemingly forever to build and be lost in an instant. Trust is the "x" factor missing in average teams, yet it can catapult team productivity and success to seemingly impossible levels.

> **In the context of building a team, trust is the confidence among team members that their peers' intentions are good, and that there is no reason to be protective or careful around the group. In essence, teammates must get comfortable being vulnerable with one another.** [7]

As Lencioni illustrates, without trust, teams might appear harmonious – but only because members fear conflict. In turn, a lack of commitment to the team further exacerbates team dysfunction; after all, why would we be committed to a team where we can't really be heard? If we aren't committed to the team, then we won't bother to hold others (or ourselves) accountable (or we may call for accountability without the necessary authority), culminating in status seeking and blame-shifting among members rather than a focus on team results. In other words: "If this team is not going to function, then at least I'm going to look good!" This chain of dysfunction is all too real for most of us.

Ed Catmull, Co-founder of Pixar, offers a snapshot of a high-trust environment inside of a high-functioning structure through an exercise they have labeled "The Braintrust". This is a group of creatives coming together to help a director find their way as they struggle to develop a new film. Importantly, the group has no power over the director, they are only present to offer honest, candid feedback.

> Frank talk, spirited debate, laughter, and love. If I could distill a Braintrust meeting down to its most essential ingredients, those four things would surely be among them. But newcomers often notice something else first: the volume. Routinely, Braintrust attendees become so energized and excited that they talk over each other and voices tend to rise. I'll admit that there have been times when outsiders think they've witnessed a heated argument or even some kind of intervention. They haven't -- though I understand their confusion, which stems from their inability (after such a brief visit) to grasp the Braintrust's intent. **A lively debate in a Braintrust meeting is not being waged in the hopes of any one person winning the day. To the extent there is "argument," it seeks only to excavate the truth.**[8]

[7] Patrick Lencioni, *The Five Dysfunctions of a Team* (Jossey-Bass, 2002), p. 195
[8] A fantastic discussion of the "Braintrust" can be found on pages 85-105 of *Creativity Inc.* by Ed Catmull.

Conclusion

Understanding network behavior allows us to control the friction within an organization and, therefore, the speed of time. Understanding healthy team dynamics allows us to harness the potential of that extra time into an increased ability to adapt. We're really just scratching the surface here. Further work could be done by looking at structuring a network through a more holistic lens of clients, employees, and products. For example, how are clients incorporated as additional nodes in the network? Do they make it more fragile or more robust? What types of clients most strengthen the network? And we can ask the same questions for employees and products. The rabbit hole is deep.

There is a saying among Navy SEALs: *"Slow is smooth, smooth is fast"*. **High-friction networks speed up time while low-friction networks slow down time.** Through understanding the key network governors – nodes, style bias, and connections – companies can architect structures that provide time for creativity, innovation, and thoughtful decision making. Grokking these three levers brings clarity to the beneficial structures that decrease friction – groups with dense connectivity and a narrow list of products/services working independently either alone or under a collective umbrella – and deleterious ones that increase friction – large, densely-connected networks with limited hierarchy and abundant products/services. But, getting structure right is not enough. We need both superior structure AND strong functional teams to slow down time.

Understanding group dynamics increases the odds that extra time will be transformed into successful outcomes. Companies experiencing slower time relative to the competition possess a superior ability to adapt. And, companies that foster cultures of psychological safety and trust within a high-functioning network take that advantage to another dimension entirely. **To sum up, the collective logic, wisdom, and creative power of a team beats that of an individual. Teams that operate in an environment of trust beat teams that operate without it. Organizations structured to avoid chaos and promote lower friction slow down time and give teams the best shot at becoming exceptional. Exceptional teams change the world.**

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https://rework.withgoogle.com/blog/five-keys-to-a-successful-google-team/

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Additional Resources:

Extreme ownership | Jocko Willink | Tedx University of Nevada
https://www.youtube.com/watch?v=ljqra3BcqWM

The Surprising Math of Cities and Corporations | Geoffrey West
https://www.ted.com/talks/geoffrey_west_the_surprising_math_of_cities_and_corporations?language=en

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