

GA-COURTENAY SPECIAL SITUATIONS FUND

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EVALUATING THE VECTOR SUM THEORY OF CORPORATE OUTPUT

January 27th, 2025

“Our most important consideration is recruitment of the best people. If we are able to attract the most talented people over time and our direction is correctly aligned, then we will prevail. *The output of any company is the vector sum of the people within it.*”

OpenAI public archives, Elon Musk emails to Sam Altman, 2015¹

“Wang Chuanfu, the founder of BYD, has hired 180,000 engineering graduates, all at the top of their classes and so you get a remarkable aggregation of human talent. This is not some unproven highly speculative activity – Wang Chuanfu is a very remarkable man, the place is full of fanatics, and they are succeeding at an almost insanely ambitious thing.”

Charlie Munger, comments at the annual meeting of Daily Journal, 2015²

“We talk about our people a lot. Why do we talk about our people? We talk about our people because they are our very, very deepest moat. And we’ve seen a near 100% retention rate across the organisation and a 100% retention rate in the engineering team.”

Eben Upton, CEO Raspberry Pi, H1 2024 earnings conference call³

“The word team must have a superior positive meaning. The weak connotation of levelling down to the lowest common denominator, of hiding deficiencies – must be rejected.”

Georges Doriot, Manufacturing Class Notes, Harvard Business School 1937-1966⁴

“I don’t want to sound heartless, but in almost every one of our businesses, it is our best 15% to 20% of people that really add 80% of the value.”

Hank Paulson, then Goldman Sachs CEO, speaking in 2003⁵

Introduction

The *Vector Sum Theory of Corporate Output* proposes that a company's trajectory can be understood using a physics-based framework, and as the vector sum of individual employee contributions, where each worker represents a vector combining their productivity (magnitude) and alignment with corporate goals (direction).

The theory argues that modern investment analysis, particularly for growth companies, should prioritise variables beyond traditional metrics and examine how effectively companies build and maintain high-performing and aligned teams.

Figure 1: The *Vector Sum Theory of Corporate Output* has been articulated by Elon Musk through the lens of physics – specifically, the concept of vector addition

“Elon and I are chatting, having a good time. And during the course of the evening, I ask –

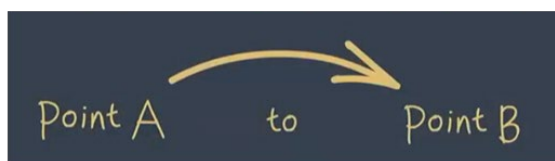
‘Elon, you’re doing Tesla, you’re doing SpaceX, you’re doing Neuralink, you’re doing the Boring Company, how do you manage solving so many big problems at the same time? What’s your advice?’

And so Elon is a physics guy – and he answers just this: ‘Let’s say you’re trying to get your company from point A to point B. Every person on the team is a vector, and your progress as a company is determined by the sum of all vectors.’

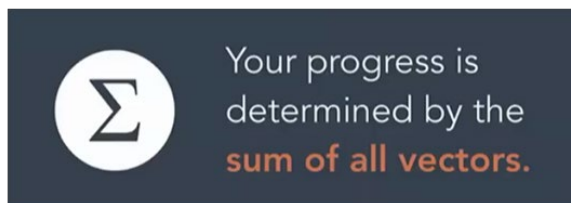
Dharmesh Shah,
co-founder of Hubspot, speaking in 2017⁶

Q: Elon, how do you work towards solving such big problems?

A: Say your company is trying to get from



Every person on the team is a vector



The theory's premise – that the ideal vector sum output optimises for all three elements of: a large workforce, high individual productivity, and alignment of workforce members to the corporate goal – may seem obvious. However its advocates distinguish themselves by arguing that such optimisation of vector sum outcomes is “*the most important consideration*” in corporate success⁷.

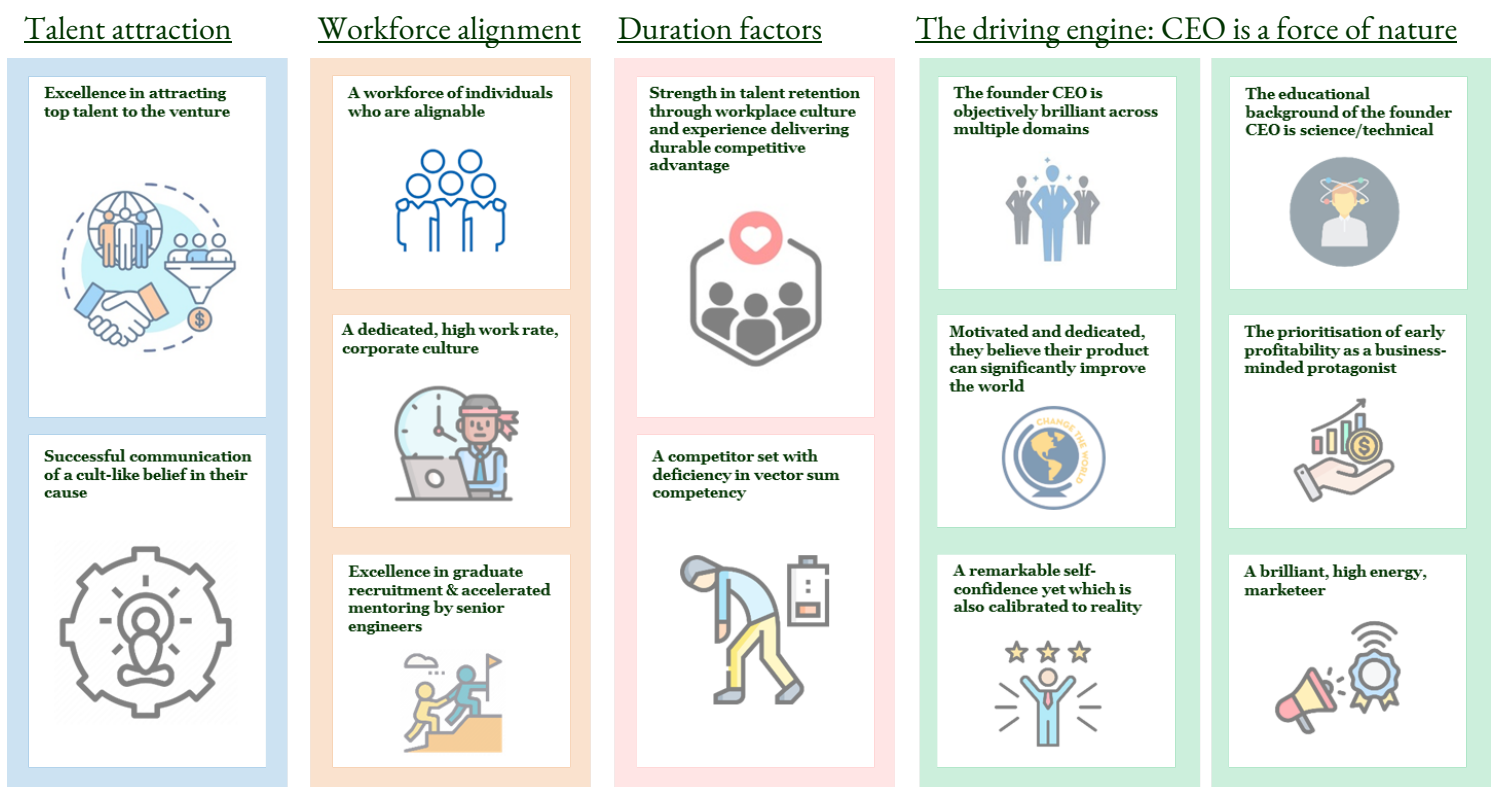
The importance of the theory is likely increasing: its underlying elements are imposing a greater impact on corporate outcomes, and the measurability of these elements is also increasing. Regarding the contention that the *Vector Sum Theory* has become *the most important consideration* driving corporate outcomes, this will be particularly valid to the extent to which artificial intelligence “AI” tool use is amplifying productivity differences between workers, making a company's ability to optimise its workforce composition the decisive factor.

The inputs of the theory are also becoming increasingly measurable, from an investor’s perspective enhancing the feasibility of conducting vector sum analyses. Time consuming onsite due diligence is no longer required to assess criteria such as individual productivity potential and alignment to a common goal: workforce data provision tools including from social media platforms such as LinkedIn, combined with AI, can target the same task.

As this white paper explores, later in his career Charlie Munger appears to have recognised the principles of the *Vector Sum Theory* (particularly in his BYD investment). A similar selection from the principles of the theory can also be observed as being applied by selected venture capitalists such as Benchmark Partners over the same time period. However, it is only more recently that comments by Elon Musk reveal the more decisive prioritising of the *Vector Sum Theory* in his assessment of the optimal corporate blueprint.

This white paper targets a deeper analysis, and reveals a comprehensive set of building blocks for optimising vector sum output. We also argue that the use of *Vector Sum Theory*, combined with the *Venture Framework* principles that our prior white papers have reviewed, can significantly improve the accuracy of investment trajectory assessments. The white paper reveals Charlie Munger as adopting the same combinatorial approach.

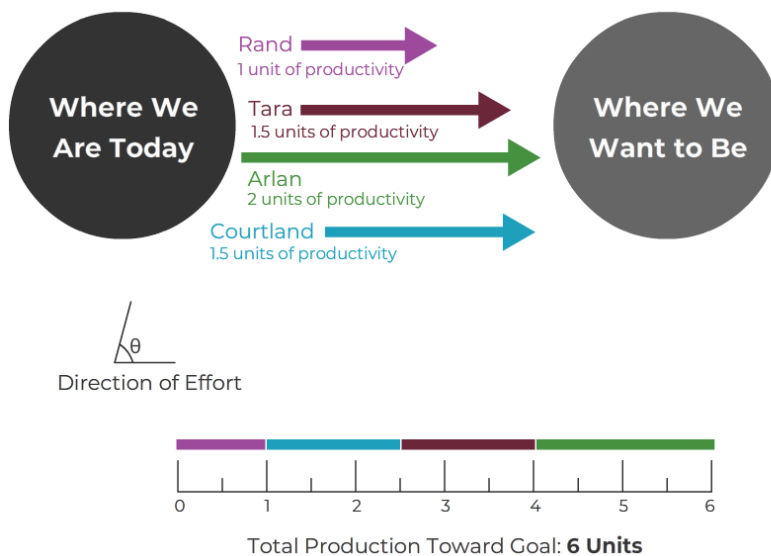
Figure 2: The comprehensive set of building blocks for optimising vector sum output, as put forward by this white paper, we believe represents a valuable contribution to the literature on growth investing⁸



Our evaluation is structured into *the what* and *the how*. *The what* examines the key drivers of the *Vector Sum Theory*: talent attraction, workforce alignment, and duration factors. *The how* analyses the necessary attributes of the founder CEO as a force of nature driving vector sum outcomes.

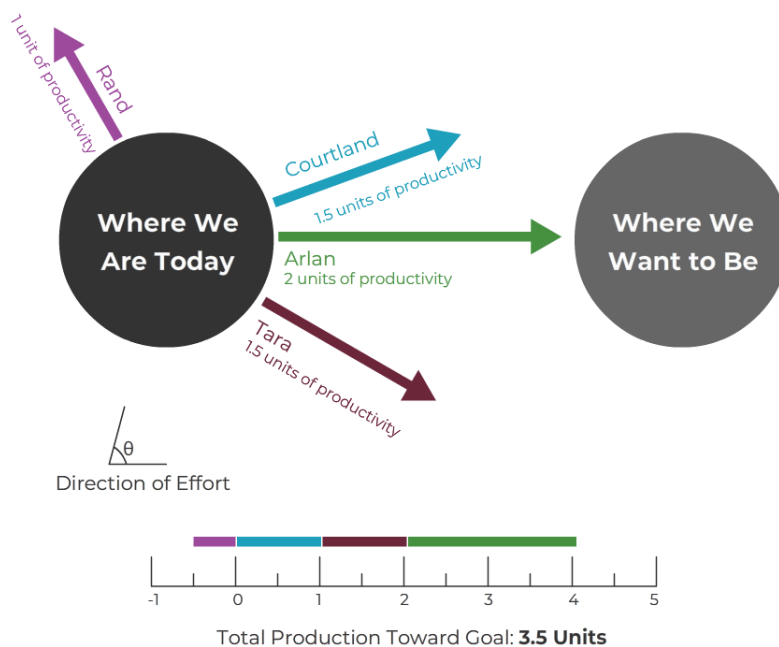
When this comprehensive set of building blocks for optimising vector sum output is present, corporate output can be maximised as shown in Figure 3, where a large workforce comprised of highly productive individuals works in perfect alignment.

Figure 3: Output is maximised when the corporation aggregates multiple highly productive individuals together, and aligns them to all work with 100% orientation to toward the same goals⁹



By comparison, Figure 4 illustrates a more common scenario: while multiple productive individuals may be present, and potentially amongst other less productive individuals, their imperfect alignment reduces their vector sum output. Most team members will work in roughly the right direction, but the lack of perfect alignment handicaps maximum collective output from being achieved.

Figure 4: Conversely, a working environment which includes multiple productive individuals, yet who are not in alignment, results in a sub-optimal output¹⁰



The *Vector Sum Theory* suggests a number of substantive implications. First, workforce alignment toward unified goals is as crucial as individual productivity, extending from the alignment of individual employees to the alignment of teams (product, marketing, sales, etc) to overall organisational alignment with customer needs.

Second, optimising vector sum outcomes yields exponential rather than linear productivity gains. This exponential effect – achieved by multiplying average individual productivity by employee count and then by orientation – is at a power law of three and as this white paper explores when optimised may be sufficient to deliver the 10x advantage that Peter Thiel has put forward as necessary for disruptive advantage in emerging companies.

Finally, the theory also defines more clearly the factors by which corporate leadership should be measured. Leadership must simultaneously and consistently deliver talent attraction, workforce alignment, and duration factors for their corporation to achieve the optimal vector sum output.

From the perspective of the investor, the white paper concludes that the use of *Vector Sum Theory*, combined with the *Venture Framework* principles that our prior white papers have reviewed, should both be deployed as part of an integrated approach to optimise investment outcomes.

1. Attracting a large workforce with high individual productivity

1.1 Excellence in attracting a large workforce with high individual productivity

In examining the *Vector Sum Theory*, Charlie Munger late in his career provides our unexpected starting point, and despite his being primarily associated with the *Buffettian Approach* at Berkshire Hathaway. The explanation by Charlie Munger in 2010 of Berkshire's BYD investment aligns with the *Vector Sum Theory* explored in this paper.

Figure 5: Comments by Charlie Munger explaining his investment in BYD reveal his recognition of the key criteria underpinning the *Vector Sum Theory*

"I warn you the founder of BYD, Wang Chuanfu, has hired 180,000 engineering graduates, all at the top of their classes and so you get a remarkable aggregation of human talent. This is not some unproven highly speculative activity.

The place is full of fanatics, by the way, and they're a big supplier to Apple and Huawei. And they're a very satisfactory supplier to those companies.

The speed with which they really mastered the technology – it's just unprecedented. I've never seen anything like it. For example, they got into the auto business in 2003, and produced their first car in 2005. That's only seven years ago. It really is a quite unusually talented group of people who were able to manage, to solve a problem like no other group of people I've ever seen.

It may be a small company but its ambitions are large and I don't want to bet against 180,000 Chinese engineers led by Wang Chuanfu."

Charlie Munger, Daily Journal annual meeting 2013, 2015 (aggregated)¹¹

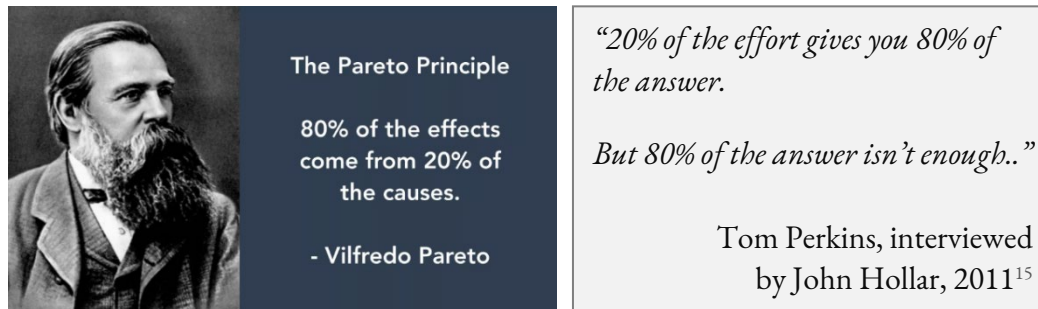
Charlie Munger photographed with Wang Chuanfu, 2010¹²



From an investment perspective, Munger observed that when a company achieves a sufficient “*remarkable aggregation of human talent*”, its trajectory shifts from being “*some unproven highly speculative activity*” to exhibiting more predictable characteristics.

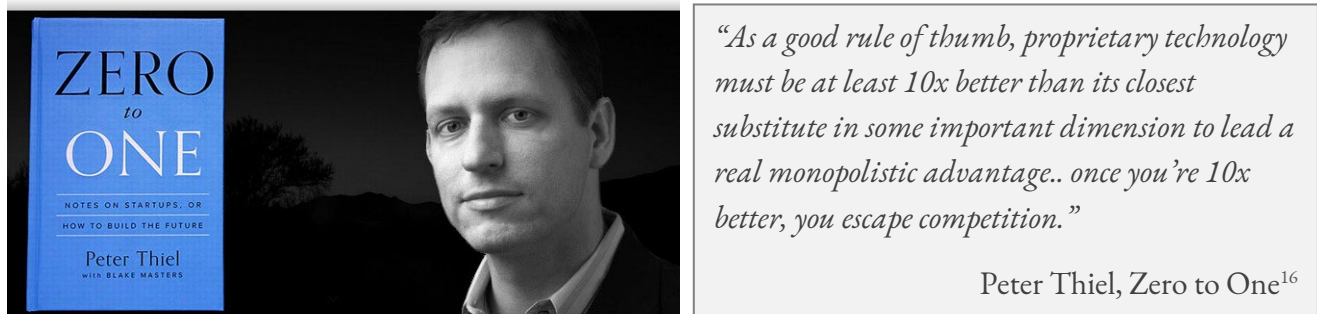
Companies achieving such aggregation benefit from the Pareto distribution exhibited by human productivity, and also within the relative context that their competitors may have underestimated the power of these Pareto effects. Selected employees are likely to be *far more productive* than other employees. Pareto effects refer to the theory of Vilfredo Pareto, who contended that that in many cases, a small percentage of the inputs can lead to a disproportionate percentage of the output, also called the 80:20 rule¹³.

Figure 6: A Pareto law distribution appears present across human productivity¹⁴



Companies that optimise vector sum outcomes first maximise talent aggregation by focusing on hiring from the top 20%, or even the top 4% (i.e. top 20% of top 20%), of available talent. Assuming the Pareto principle, this can result in 5x to 20x higher productivity compared to competitors and deliver the 10x superiority that Peter Thiel has put forward as essential for decisive advantage in emerging companies.

Figure 7: In his 2014 book *Zero to One*, Peter Thiel argued that when an emerging company possesses an advantage at least 10x superior to its competition, it escapes its competition



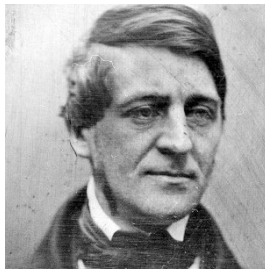
Thiel argues that emerging companies can achieve disruptive growth through exceeding 10x advantage “*in some important dimension*”. The *Vector Sum Theory* posits that it is the advantage in high individual productivity, when combined with workforce size and alignment of workforce members to a corporate goal, that is both the seminal stage, and maintenance determinant, for Thiel’s form of 10x advantage to be held.

This perspective inverts traditional venture theory by positioning workforce talent and alignment as preceding technological advantage. In our assessment this inversion must be at least partially valid – technological advantage requires workforce talent and alignment to first develop it. In practice, the evolution is most likely multi-staged and symbiotic: high levels of workforce talent and alignment develops technology that attracts and incentivises similar talent and alignment, creating a self-reinforcing feedback loop.

“Ultimately, people can and will be drawn in by the recognition of technological advantage.”

Georges Doriot, Manufacturing Class Notes, Harvard Business School 1937-1966¹⁷

1.2 Talent attraction through aspiration – a mission statement that inspires prospective hires to strive for the same goals as the organisation, by being hired



“Our chief want is a cause that will inspire us to be what we know we could be.”

Ralph Waldo Emerson,
American Essayist, 1803-1882¹⁸

Companies excelling at talent attraction often do so by anchoring themselves to a *mission, calling, or purpose* that offers prospective workforce members value beyond merely monetary compensation (and on top of the founder CEO's role also as a talent magnet, which we explore in Section 4).

“Don't attach yourself to a person, place, or organisation. Attach yourself to a mission, a calling, or a purpose. That's how you keep your power and your peace.”

Elon Musk, public comments, 2022¹⁹

When this form of mission or purpose emerges authentically, it can create extraordinary talent magnetism. Tesla is one example – mission statement: *“to accelerate the world's transition to sustainable energy”²⁰*, and receiving 3 million job applications in 2021²⁰ – surpassing the combined annual U.S. output of bachelor's (2.1 million) and master's (0.8 million) degree graduates²¹. Elon Musk also promotes SpaceX to prospective workforce members along analogous concepts of *mission, calling, or purpose*.

“If there are no new entrants in the space arena with a strong ideological motivation, then we were on a trajectory to never be a space-based civilisation. We need to inspire humanity, and this is also a way to inspire. The value of building inspiration is very much under-rated, no question. As we show that this is possible, and that this dream is real, it is not just a dream, it is something that can be made real – the support will snowball over time.”

Elon Musk, speaking in 2017²²

Talent magnetism through successfully communicating a mission or purpose that deeply inspires prospective hires can be used by a company to select for both competence and loyalty. This can result in cult-like mentalities on display within the workforce, characterised by a core belief that despite external skepticism, their cause is fundamentally just and their determination uniquely sound.

“BYD is full of fanatics.”

Charlie Munger, Daily Journal annual meeting 2018²³

The outcome is that whilst highly talented professionals would otherwise typically gravitate toward the blue chip prestige and social benefits of larger firms, mission-driven emergent companies can overwhelm this – even as small, technical startups. Through their cult-like appeal, they convey what Huey Lewis termed “*it’s hip to be square*”, convincing elite talent to choose purpose over conventional prestige.

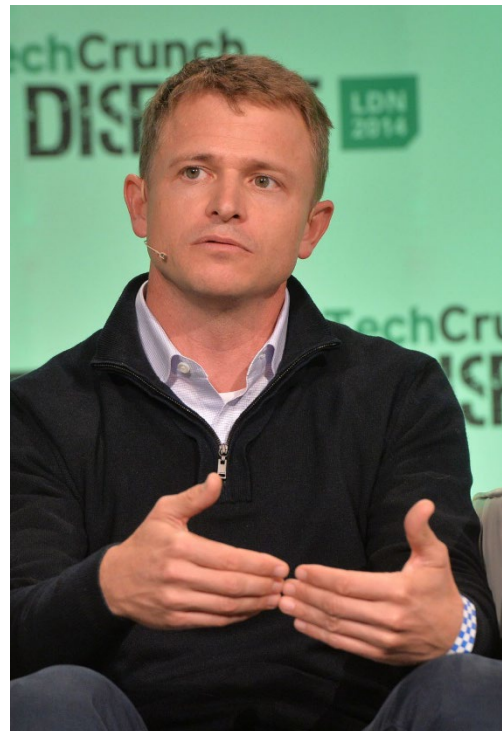
Figure 8: Venture capitalists such as Peter Fenton at Benchmark Partners have recognised that talent aggregation is heightened by mission statement that precipitates a cult-like adherence

“Great ventures possess a motivation that runs so deep that it feels insatiable. There is just a profound deep innate motivation. That is infectious, it lets other people around them have that motivation, and you know often I ask the question of a company – “what is the purpose and why are you doing this?”

You would be amazed at how few ventures can readily answer that question, but the great ones can. They have a real sense of purpose, and it is authentic, and not usually about senior management.

Absent an iconic narrative of a different path, people fall back into what they know. Success isn’t pre-determined, there must be a hero’s journey, so to speak.”

Peter Fenton, Benchmark Partners, speaking in 2023²⁴



1.3 The inspiration of prospective hires can also be accreted through branding, or rights ownership

The aspiration to join a company through *mission, calling, or purpose* can also be accreted through incremental attractors: brand strength (as with Starbucks and Apple) or portal dominance of aspirational domains (such as Spotify in leading in music streaming or Formula One at the pinnacle of motor racing).

In the case of Starbucks or Apple the mechanism is through brand strength, whereas in the examples of Spotify or Formula One the mechanism is instead through the ownership of a dominant portal whose attributes enduringly capture aspirational qualities – Spotify as the portal for the glamour of leading in music streaming, Formula One as the portal for the glamour of the pinnacle of motor racing – and both maintain as a result of their dominance an enduring outward presentation of aspirational values, and therefore workforce talent attraction competency.

“The name Starbucks has magic. It piques curiosity.

The name Starbucks connoted a product unique and mystical.”

Starbucks founder Howard Schultz, 1999 Autobiography, *Pour Your Heart Into It*²⁵

Apple is about something more than Apple. Our core value is that we believe that people with passion can change the world for the better.

We believe those people that are crazy enough to think they can change the world are the ones that do.”

Steve Jobs, Apple’s Think Different campaign, September 1997²⁶

2. Optimising workforce alignment

2.1 Selecting a workforce of individuals who are alignable

Jobs realised seasoned professionals were not the way to go, instead switching gears to “people that were insanely great at what they did but were not necessarily seasoned professionals.”

The hiring philosophy of Steve Jobs, The Independent, 2017²⁷

2.1 a) A diversity of suitedness to hierarchical organisation is seen across humans

For an organisation to optimise its vector sum outcomes, an astute hiring strategy is also required which recognises the differences in human nature in terms of our suitedness to hierarchical organisation.

Progress depends on human collaboration, this requires hierarchical coordination, and yet this same hierarchy can constrain workers from exploring anti-authoritarian, breakthrough solutions which are outside of established frameworks. Thomas Kuhn’s 1962 book *The Structure of Scientific Revolutions* examines this dynamic, showing how progress in science was also a social phenomena, historically occurring through revolutionary advances led by a minority of those individuals who possessed the characteristics to challenge rigid, hierarchical paradigms²⁸. Kuhn observed that when anomalies arise that challenge the existing paradigm, they trigger, amongst the small group, a crisis of confidence in the established leadership. This leads to the formation of a breakaway group which, freed from hierarchical constraints, pursues truth more openly.

Figure 9: Thomas Kuhn recognised scientific revolutions arise when breakaway scientists reject dominance hierarchies

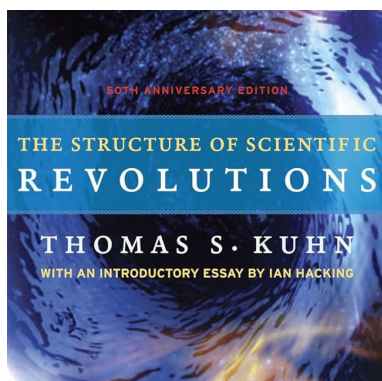
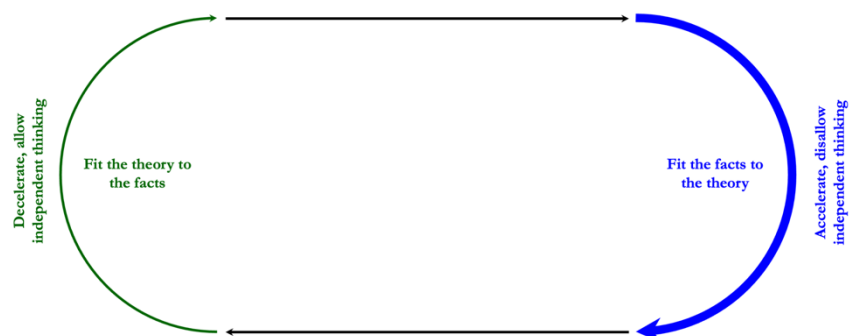


Figure 10: Thomas Kuhn’s understanding differentiates science into periods of *throughput* (large groups operate following established doctrine), and *discovery* (where a breakaway group rejects established doctrine). Both are necessary, but only the latter framework can adopt a sincerely truth-seeking approach²⁹



Successful emergent organisations by definition will almost always have had anti-authoritarian founders. Such founders use their wisdom and technical expertise to *reject authority*, yet for their workforce the astute selection is of individuals who are more comfortable using their wisdom and technical expertise to *select authority*.

2.1 b) Rather than seeking replicas of themselves, founders should target complementary talent – highly capable yet alignable individuals who provide value through their technical expertise

The majority of the target workforce will be those who have carefully used their wisdom and technical expertise to select their employer and yet individuals who are also less inclined to challenge established wisdom independently, preferring instead to work within existing structures.

The successful recruitment of this archetype requires recognition of the distinction between the founding team and those that may become their most productive employees. Rather than seeking replicas of themselves, the founders should target complementary talent – highly capable yet alignable individuals who can provide exceptional value through their technical expertise.

This requires both self-awareness and courage from the founding team: having taken the risk to start the venture, they must also then be willing to hire individuals who may even exceed them in technical competency, even if not in entrepreneurial or anti-authoritarian risk tolerance.

Figure 11: Rather than seeking replicas of themselves, founders should target complementary talent – highly capable yet alignable individuals who provide value through their technical expertise

“It is not as simple as build a great team, great entrepreneurs need to find complements. So if you look at yourself and you reflect on your skills and your talents and your unique abilities, you will see – everybody has their gaps. I learned this from some great entrepreneurs, who were really very different, but each of them found a complement in other people, that allowed them to be more of who they are.

And so – acute self-awareness reveals what you need in your partners, and I think that self-awareness is humbling because you have to admit what you are not great at, and you have to play your game.

The great entrepreneurs figure that out, that is what Steve did at Apple, with Tim Cook, a person that really balanced the stuff that he wasn't great at, so he could be obsessive about the stuff that he was.”

Peter Fenton, Benchmark Partners, interview in 2013³⁰

Figure 12: Whilst the anti-authoritarianism of the founding team may remain internal, even to their own ideas, anti-authoritarianism in the workforce is directed externally, at competitor firms

“Any year that passes in which you don't destroy one of your best-loved ideas is a wasted year.”

Charlie Munger,
interview with Becky Quick, 2024³¹

“The nature of the business we're in is that we want to destroy our incumbents competitors.. and we're collectively aligned around being anti-authoritarian to destroy the incumbent.”

Eric Vishria, Benchmark Partners, 2022³²

An added criteria in heightening workforce alignment is, where anti-authoritarian tendencies remain, for the corporate culture to direct it externally – at the incumbent competitors deemed by outsiders as the authoritative leaders of the industry as opposed to within the emerging company which is disrupting those incumbents.

2.1 c) Successful emergent organisations may also target the selected anti-authoritarian and high capability personality type, yet junior

“I would recommend paying close attention to people who haven't completed their grad or even undergrad, but are obviously brilliant. Better to have them join before they achieve a breakthrough. If we are able to attract the most talented people over time and our direction is correctly aligned, then we will prevail.”

OpenAI public archives, Elon Musk emails to Sam Altman, 2015³³

There is a hiring exception to the highly capable yet alignable individuals who provide exceptional value through their technical expertise to form the majority of the workforce.

A selection of very high capability individuals who may naturally develop anti-authoritarian tendencies as they mature, yet hired early in their careers, can still also be very beneficial to the emergent company. As Elon Musk notes, *“better to have them join before they achieve a breakthrough.”*³⁴ While these individuals may develop entrepreneurial ambition as they mature, they may be both hireable and alignable early in their careers when they will still prioritise learning and development.

“I met, at the beginning of Pershing, a guy named Oliver White, who I believe has become recognised as one of the top fly fishing guys in the world. Very smart, interesting guy. And I said – look if you are interested in business, and if you want to intern, learn something about it – come work for me. He learned a ton about business, and worked on our proxy contest situations.

And we hired a guy named Mari Sandamsky, who I met on the tennis court – super talented guy, top tennis player, I offered him a job – he has worked for us for the last couple of years, he's doing a phenomenal job.”

Bill Ackman, founder of Pershing Square Capital Management, speaking in 2020³⁵

2.2 The workforce is thereon aligned by the organisation operating with a clear ethos toward maximum industriousness directed toward unified goals

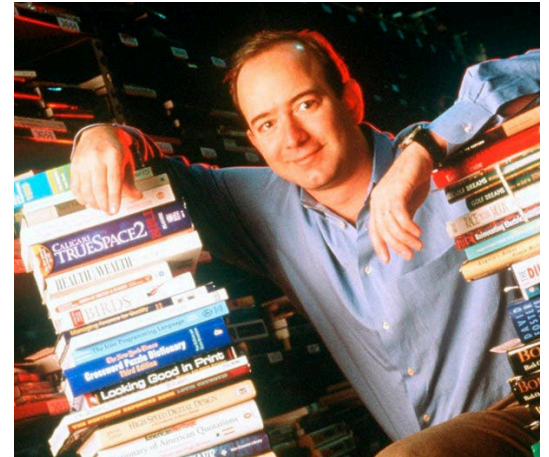
The successful emergent organisation thereon operates on a simple ethos: maximum industriousness directed toward unified goals. A universal application of this maxim, and the magnitude of impact from it, can be achieved across the firm: the simplicity of the message enables it to be delivered universally – as Maurice Saatchi once said, *“simple ideas enter the brain quicker and stay there longer”*³⁶ – and the message itself directly translates into the work rate criterion underpinning vector sum outcomes.

Figure 13: The successful emergent organisation optimises workforce alignment using a simple, clear ethos: maximum industriousness directed toward unified goals

“When I interview people I tell them, ‘You can work long, hard, or smart, but at Amazon.com you can’t choose two out of three.’

It’s not easy to work here. But we are working to build something important, something that matters to our customers, something that we can all tell our grandchildren about. Such things aren’t meant to be easy. We are incredibly fortunate to have this group of dedicated employees whose sacrifices and passion build Amazon.com.”

Jeff Bezos, Amazon 1997 letter to shareholders³⁷



“Be extremely tenacious, and just work like hell – this is the way to improve our odds of our success. I mean we just have to put in 80 to 100 hour weeks, every week. If other firms are putting in 40 hour work weeks, and we are putting in 100 hour work weeks, then we will achieve in four months what it takes them a year to achieve.”

Elon Musk, speaking in 2013³⁸

As the organisation grows, the message defining its simple, clear ethos may also evolve – as exemplified by Tesla, whose goal shifted at various points in its early years back and forth between volume production and cost reduction. However, in each case simplicity of ethos is maintained.

More generally, it is by many emergent companies advocating simplicity directed toward a clear unified goal, and with a maximisation industriousness ethos, that these variables become the critical factor in their subsequent corporate success. Consider BlackRock's singular focus on, and the scaling of, index tracking – would its same success level have been as probable under prior parent Blackstone's broader mission? *Vector Sum Theory* proponents would argue the answer is no.

2.3 Alignment efficiency is also achieved through excellence in graduate recruitment paired with accelerated executive mentoring

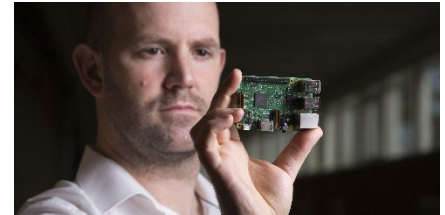
Alignment efficiency is achieved through excellence in graduate recruitment paired with accelerated mentoring by senior executives. This dual approach reduces hiring costs while ensuring alignment, as new graduates are rapidly developed in skillset and mindset through direct pairing with senior professionals.

Figure 14: Excellence in graduate recruitment paired with accelerated mentoring by senior executives

“The thing that has changed in our approach to the team and our approach to the recruitment over the last couple of years, is we have gotten a lot better at recruiting graduates. Historically for us, recruitment has focused on relatively senior hires, relatively senior mid-career professionals. I think what we’ve got a lot better over the last couple of years is running our internship programs and converting those interns to graduate hires. I think one thing we’re very good at doing is putting new graduate hires alongside very senior engineers. I think both the senior engineer and the graduate finds that valuable.”

“We finally -- we think we finally cracked how we hire graduates. So we have an absolutely outstanding internship program. And we’re getting better at converting those interns into graduate employees.”

Eben Upton, CEO Raspberry Pi, H1 2024 conference call³⁹



This mentorship model creates mutual benefits: mentees gain accelerated development, mentors feel uplifted by passing on their knowledge to the next generation, and the company achieves high-quality talent and alignment at optimal cost.

“A young person needs a mentor, and I think an older person in a way needs a protégé. It’s a mutually beneficial arrangement that has gone on for millennia and I think it will continue.”

“So you’re lucky to have such older persons that are willing to devote a lot of energy and time to bringing along younger people. I’ve tried to do that. Whether I’m as good as the ones I had I have no idea, but I’ve also spent time, doing that..”

Tom Perkins, co-founder of Kleiner Perkins, interviewed by John Hollar, 2011⁴⁰

3. Maintaining the advantage: talent retention and relative to an incumbent competitor set with enduring handicaps from corporate ossification

3.1 Strength in talent retention through workplace culture and experience

Once an exceptional workforce is assembled, maintaining long-term advantage requires leaders to understand and create conditions that foster enduring loyalty.

3.1 a) A retention culture is a product of clear recognition by management that its workforce is its deepest moat

The foundation of a retention culture more generally stems from an understanding by management that a committed workforce will provide its strongest competitive advantage. Rather than strict rules to deliver this outcome, the more general appreciation of the targeting of talent retention allows the company to adapt to changes in the corporate environment yet still retain its targets focused on critical end goals.

The principle has been conveyed well by Eben Upton – the founder CEO of Raspberry Pi, describing the workforce of the company as its “*very, very deepest moat*”.

“People culture. We talk about our people a lot. Why do we talk about our people? We talk about our people because they are our very, very deepest moat.”

We continued to grow the team over the last year. We continue to invest in engineering. In the engineering team, we have, even before the IPO, a high rate of stock ownership across the employee base.

And we're very pleased that since the IPO, we've seen a near 100% retention rate across the organisation and a 100% retention rate in the engineering team.”

Eben Upton, CEO Raspberry Pi, H1 2024 earnings conference call⁴¹

This form of framing of the importance of workforce retention places it in equivalency to the *Buffettian Approach*⁴² concept of durable competitive advantage.

To the extent that this equivalency is achievable on a practical basis, its success can be assessed as a vital criteria for an emerging business which would otherwise lose market dominance if their pace of innovation – a function of talent retention – fails to remain competitive.

“Buffett talks about a great business like a castle surrounded by this wide moat.

But you also have barbarians trying to cross the moat and steal the treasure.”

Bill Ackman, Pershing Square Capital Management, comments made in February 2024⁴³

The same lesson was part of the early investment experiences of Charlie Munger, who suffered impairment when a failed technology investment lost top talent to competitors, and as such lost its innovation potential, an experience that kept Berkshire Hathaway away from tech investments for decades – until BYD.

“When I was young I poured money into a scientific-instrument company with a great oscillograph. Then some venture capitalist hired the top guy away, and the invention of magnetic tape came along and suddenly made the oscillograph obsolete.”

Charlie Munger, Wesco shareholder meeting, 2010⁴⁴

3.1 b) The environment that fosters workforce retention focuses on an *artisan* culture and minimal bureaucracy

Companies that excel at workforce retention do so through their strong culture, which also facilitates hiring, as well as by providing a superior employee experience, which further empowers both retention and scaling.

As Tom Perkins emphasises, retaining world-class technical talent demands creating an environment that surpasses even a university laboratory in both culture and atmosphere.

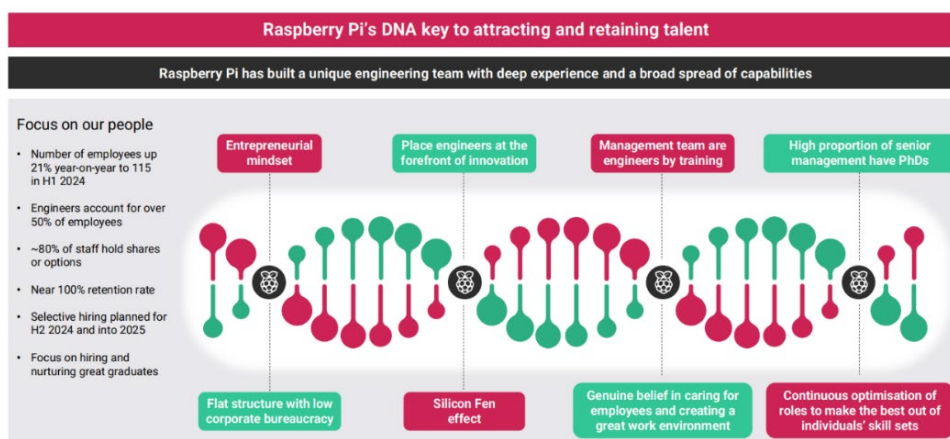
“There needs to be an understanding that to do world class work you had to have world class people and treat them extremely well, and create an atmosphere that was better than in a university laboratory.”

Tom Perkins, co-founder Kleiner Perkins, interview with Glenn Bugos, 2001⁴⁵

A more recent example of an emergent company exemplifying this cultural model is Raspberry Pi. Here, the culture dictates that engineers lead the organisation, and as such resulting in the optimal *artisan* atmosphere by aligning product responsibility with corporate authority.

The culture at Raspberry Pi also targets alongside technically trained management (many holding PhDs) minimal bureaucracy and a flat hierarchical structure. Advantageously located in Cambridge's Silicon Fen, the company culture also emphasises genuine employee care, with a continuous optimisation mission adapting roles to leverage individual strengths while fostering an exceptional environment.

Figure 15: The more modern example of Raspberry Pi exemplifies the cultural model delivering the conditions that foster workforce loyalty⁴⁶



3.2 A relative workforce talent advantage extends its duration when there is a large incumbent competitor set with deficiency in vector sum competency

3.2 a) A large incumbent competitor set with deficiency in vector sum competency provides a long-duration runway for competitive displacement

“The secret of life is weak competition.. if you have an IQ of 100 and everybody else has an IQ of 80, you are way better off than if you have a 140 IQ and all the rest of them also have 140.”

Warren Buffett, Berkshire Hathaway annual meeting, 1998⁴⁷

An additional circumstance which accretes the emergent company in maintaining its *relative* vector sum advantage is achieved when the company operates in a sector already dominated by large incumbents with their own deficiency in vector sum optimisation. The result is that an extended runway for competitive displacement exists in favour of the emergent company.

When the emergent company retains and aligns top talent better than competitors and as such maintains a more innovative trajectory, the productivity gap between emergent and incumbent companies widens.

The implication is that duration is heightened when the emergent company leverages technological innovation to target incumbents in stagnant industries with poor performance metrics. This environment allows for greater relative productivity gains than would be possible in more dynamic sectors.

Figure 15: In founding Amazon, Jeff Bezos entered the book retail industry where incumbent companies possessed far greater deficiency in vector sum optimisation



“Books were great as the first best to sell online because books are incredibly unusual in one respect – and that is that there are more items in the book category than there are items in any other category by far.

In the book space there are over 3 million different books worldwide active in print at any given time across all languages, more than 1.5 million in English alone.

When you have that many items you can build a store online that couldn't exist any other way.”

Jeff Bezos, Amazon founder and CEO,
public domain interview, 1997⁴⁸

A historic case study of this model is provided by Jeff Bezos, who, prior to founding Amazon, was employed by hedge fund D.E. Shaw & Co⁴⁹. According to our framework, even optimal vector sum productivity within the hedge fund industry would have offered only limited *relative* competitive advantage assuming other hedge funds were also present operating at comparably high levels of efficiency.

By founding Amazon, however, Bezos entered the book retail industry where incumbent companies possessed far greater deficiency in vector sum optimisation. The insight by Bezos into online sales, combined with operating against less innovative competitors, resulted in a significant long-term relative competitive advantage that exceeded that possible by Bezos in the hedge fund sector.

This pattern repeats with other successful ventures: Elon Musk's Tesla and SpaceX challenged stagnant automotive and aerospace industries, while Spotify, Uber, and Airbnb disrupted ossified music, transportation, and property rental markets respectively.

3.2 b) Corporate ossification is an inevitable process over time in long-established, scaled industries

The opportunity for emergent companies, through vector sum optimisation, to target industries characterised by above-average stagnation in our assessment is likely to be an enduring feature of the strategic path that both emergent companies and their investor sponsors can target.

As corporations mature, their leaders face conflicting incentives. While the fiduciary responsibility of leadership dictates they should maximise vector sum productivity, leadership is also incentivised to maximise personal gain during their limited tenure at what may have become a large scale corporation with outsized management remuneration potential. This incentive can lead to the exclusion of otherwise upcoming talent from senior positions to the extent to which such talent would thereon threaten current management tenure. The result – corporate ossification.

This principle has been put forward in a colourful manner by Carl Icahn, and more succinctly, by John Malone.

“The CEO of a company doesn't want anybody under him smarter than him. Because if the guy's smarter than him, he's a threat.

So he will only let these guys come up who are a little dumber. And it is that guy who keeps moving up and up and up. The CEO retires, and that next guy becomes the CEO. So he's assigned a #2 to CEO who is a little dumber than he is. And eventually, we're going to have a lower talent level running our all companies, and we might not be far off from that right now.”

Carl Icahn, speaking in 2007⁵⁰

“You see, a person who rises to the top of a big corporation and yet owns none of it is much more interested in control than they are in economics. Whereas the person that owns the business never has to fight for control, they are used to control. What they fight for is economics.”

John Malone, quoted in Cable Cowboy by Mark Robichaux, 2005⁵¹

Consider how some large companies in the information technology sector trade at low multiple PE ratios, such as Hewlett Packard, Xerox or IBM, and are reporting significantly inferior growth metrics in comparison to an emergent, vector sum optimised company, such as Raspberry Pi.

The investor focused on the *Vector Sum Theory* is not necessarily making a precise technological forecast when backing Raspberry Pi, but rather on its vector sum advantages over calcified incumbents within the same sector, and whose poor performance and inability to attract top talent create a self-reinforcing cycle of competitive advantage in favour of the emergent disruptor.

3.2 c) The investor focused on the *Vector Sum Theory* places this framework above precise technological forecasts

Whilst not illogical, *Vector Sum Theory* challenges conventional investing methodology: the emergent company's success stems primarily from the output capacity of its workforce, not its existing technological position.

This perspective clarifies an otherwise nebulous concept in venture investing. Consider Amazon's evolution from books to comprehensive online retail and cloud services, or Uber's expansion from chauffeur services to ride-hailing and multi-category delivery. It is unconvincing in our assessment to contend that the scope of these companies' expansion was predictable from a deterministic assessment based solely on their initial business position; instead predictive utility was linked to recognising the vector sum optimisation of their people.

Whilst some venture capitalists might claim prescience as to an initial technological position being the key driver in hindsight, others are more frank about the actual process occurring. As Peter Fenton of Benchmark Partners suggests, it is the capability of the founding team to themselves adapt, and attract and align a high aptitude workforce able to do the same, that defines the transformation of the business as it grows.

Figure 16: Peter Fenton of Benchmark argues that an emergent company's success stems primarily from the capability of the founding team to themselves adapt, and attract and align their workforce



“The problem with being a founder entrepreneur CEO is that your business is changing on you radically every year. So as you scale from 0-30 it is very different at 30 than it is at zero, and to 300 all over again and then at 3,000 all over again. And if you don't have that curiosity and ability to learn you can get left behind – the company will grow faster than your ability to grow with it.

So there is a common trait that we look for that I would call – ability to learn. And my partner Bob likes to say “be a learn it all, not a know it all”. And being a “learn it all” means you have to be very self-effacing around what you do and don't know, apply critical thinking, and don't assume that what you have been told is right. And that trait I think is a muscle that you need to continually work on and sometimes people lose that as they achieve success. They become know it alls, and they are full of advice, and one of the things we aspire to do in our business is accept humbly that we don't know a whole lot, but we do have the ability to learn quickly.”

Peter Fenton, Benchmark Partners,
great entrepreneurs are 'learn-it-all' not 'know-it-all,' 2016⁵²

The comments by Fenton reveal his recognition that for rapidly evolving businesses, evaluating the people may matter just as much, or more than, analysing the business model or technological position. Exceptional teams, not the product feature set, reshape markets through continuous innovation.

As such, the final form of the business is not as predictable as its investors may hope for – and instead what is often more predictable is that an exceptional founding team, and vector sum optimised workforce, when retained, will compete effectively as the business environment continues to evolve and the corporation adjusts their strategy accordingly, learning as they go.

Similar comments by Elon Musk reveal the same mode of thought, in his direct linking of the pace of competitiveness of a company as primarily derived from the vector sum optimisation of its people.

“If you organise people in a better way, to produce products or services that are better than that existed before, and you have some ownership in that company, then that essentially delivers to you economic wealth and therefore the right to allocate more capital.

Alternatively, if your only defense against invading armies is a moat, you will not last long. What matters is the pace of innovation. That is the fundamental determinant of competitiveness.”

Elon Musk, public comments, 2024⁵³

In the best case, a self-reinforcing cycle is created: top talent gravitates toward existing concentrations of talent, while underperforming companies struggle to attract or retain strong candidates. From the perspective of the investor recognising the vector sum divergence between emergent company and competitor set, a forecast accurate outcome of success becomes more probable.

“[What we are looking for is] something like an autocatalytic reaction in chemistry, precisely the sort of multi-factor triggered lollapalooza effect we need.”

Charlie Munger,
Practical Thought About Practical Thought, 1996⁵⁴



4. The central, driving force: the founding CEO and management team

Our analysis so far has reviewed *the what* – the key drivers of the *Vector Sum Theory*: talent attraction, workforce alignment, and duration factors. The white paper next examines *the how* – and more specifically the attributes of the founder CEO and management team as the central, driving force organising vector sum outcomes. We group these attributes into five categories, and examine each in turn.

4.1 The founder CEO and management team are objectively brilliant across multiple domains

“Hard power may be needed for conquest and self-protection, but it is the power of attraction – soft power – that ensures the stability of an organisation.”

George Soros, writing in 2014⁵⁵

“There's some common patterns in breakthrough companies. First is just an incredible, extraordinary, exceptional entrepreneur.”

Matt Cohler, Benchmark Partners, Silicon Slopes Tech Summit 2017⁵⁶

The first attribute is that the founder CEO is readily ascertainable as brilliant in their own right. Naturally this brilliance is critical for the founding of the company, in terms of the wisdom of its business mission, initial technological position and thereon the gathering together of its founding team. Clearly, such brilliance will also decisively shape of the future of the company, as Peter Fenton noted, at the scaling phase during which the venture capital investor typically allocates, the emergent company's success stems primarily from the capability of the CEO and founding team themselves to make adaptive decisions and align their workforce.

However, sufficient brilliance by the founding CEO can also trigger in prospective joiners to the company the human capacity for worship, and in the corporate sense a form of *calling* to those others to join the workforce. As George Soros notes, it is the power of *attraction*, in this case through brilliance, that exceeds the power achieved through more traditional forms of executive authority. And as such, for the CEO who exhibits brilliance, they bless their venture with an additional lever with which *talent attraction through aspiration* is achieved.

As Matt Cohler at Benchmark Partners has observed, breakthrough companies consistently share this key element: *“an incredible, extraordinary, exceptional entrepreneur”*.

Peter Fenton at Benchmark Partners provides a further fleshing out of the form of brilliance that successful founding CEOs exhibit, noting that a great founder will engender in Fenton the desire to *“quit what I'm doing right now to go work with this person”*. Fenton adds *“great founders slow down time.. so why does time slow down.. you are recording more information.. and it's the density of truth you feel in reflection on those moments.”*

“I think it's always useful to say – is there some part of me that would quit what I'm doing right now to go work with this person, and if the answer is no, you probably shouldn't invest [in the venture]”

Peter Fenton, Benchmark Partners, speaking in 2023⁵⁷

Figure 17: Peter Fenton of Benchmark “great founders slow down time.. why.. you are recording more information.. and it’s the density of truth you feel in reflection on those moments.”

“Poetry, unlike prose, expands our perception of the universe because of its breaking from the norms of discourse. I love Wallace Stevens poems – and when you read his poems they slow down time. They expand your understanding of the universe in a way that changes it.

Great founders also slow down time. And when a great founder comes in, I felt this about Travis Kalanick, and even in his own way when Mark Zuckerberg presented the Series A when I was at Accel Partners - it has that ‘once you’ve seen it you can’t unsee it’ feeling, and it changes your eyes in a way that it is arresting. I’ve done this job 25 years and for the founders that have been the manifestation of a great poem, I remember every part of the meeting, I remember even the smell of the coffee.

So why does time slow down? Well time doesn’t actually slow down, but you are recording more information – there’s something about a great entrepreneur for investors, where the slowing down of time, the expansion of awareness, and it’s the density of truth that that you feel in reflection on those moments.

It is rare. And I can spend unfortunately three years to four years and never feel that way. But then I remember meeting Nicolas Julia [founder of Sorare], and it is not only rare but it is weird because you know you are going to invest about three minutes in to the meeting, so it’s this is sort of strange sense of okay we have to do due diligence now and we have to ask good questions, but Nico expresses it in a way that’s so pure you just sit there and think ah okay well that probably won’t happen again for another five years so I should enjoy this moment.”

Peter Fenton, Benchmark Partners, interview by Jeannette zu Fürstenberg, 2022⁵⁸



Benchmark Partners, 2014, three years after investing in Uber

4.2. Motivated and dedicated, the founder CEO and management team believe their company can significantly improve the world; and they prioritise profitability early

In a comparable way to which a company can excel at attracting talent by anchoring itself to a *mission, calling, or purpose* that offers prospective workforce members value beyond merely monetary compensation, these characteristics will be also exhibited by the founder CEO themselves. The leader's belief in the potential of their company to better the world not only fuels their own motivation but also inspires the same throughout their company, including employees, customers, and financial partners. A shared sense of captivation and commitment results “*if you're fascinated, I'm fascinated*”.

“That was the theory that Steve Jobs had, he said the best way to reveal your love for the human species is to put your heart and soul into a product and give it to them.”

Brian Chesky, Airbnb CEO, discussing Steve Jobs, 2023⁵⁹

The expression of this mission is typically through an obsessive commitment to developing a top-tier product, a naturally challenging goal and thereon sufficient to displace the existing competition within the market place. As such emergent companies also exhibit a history of struggle to attain product leadership, embodying a type of corporate *hero's journey*.

Figure 18: Elon Musk's example of sleeping at Tesla's production line during critical times illustrates the exceptional founder CEO's focus on creating and maintaining iconic, best-in-class product, combined with the theme of struggle before success

“Absolutely, of course. Yeah, I'm sleeping on the factory floor, and not because I think that's a fun place to sleep. You know, terrible. But I don't have time to go home and shower.

I really believe that one should lead from the front lines and that is why I am here. I am personally on that line, in that machine, trying to solve problems personally where I can. We are working seven days a week and I have personally been here on zone 2 module line at 2am on a Sunday morning to help diagnose robot calibration issues. I am doing everything I can.”

Elon Musk, speaking in 2018⁶⁰



An additional authenticity of the founder CEO's belief in the higher *purpose* from the success trajectory of the emergent company is expressed by the prioritisation of profitability early. The premise being that a mission of such importance cannot afford to rely on the kindness of strangers within the financing cycle.

Figure 19: An additional authenticity of the founder CEO's belief in the higher purpose from the success trajectory of the emergent company is expressed by their prioritisation of profitability early

"The only reason to make any investment is to make money, period, full stop. And with a sense of urgency to get on with it, to get it done, do it quickly, do it efficiently, with a full understanding of the importance of the bottom line. All companies should have that, but some are pretty casual about it.

This is where I entered the picture. I never apologised for the urgent need to make a profit, to get on with it, and commercialise these ideas."

Tom Perkins, co-founder Kleiner Perkins, interview 2001⁶¹

"Think about the biggest winners in venture: Amazon, Google, Facebook, Apple, go down the list, Uber, Stripe.

Every single one of those companies, before they took branded venture capital, was working.

You know Amazon was doing 20 plus million in revenue, you might say okay it's tiny, but it was working it was up and running.

If you look at the winner's circle the top 10 venture investments ever, they were all up and running and working, not threatened."

Peter Fenton, Benchmark Partners, interview with MIT Venture Capital & Private Equity Club, 2021⁶²

4.3 The founder CEO and management team possess remarkable self-confidence yet which is also calibrated to reality

A third quality of the founder CEO as the central, driving force organising vector sum outcomes is their possession of a remarkable self-confidence yet which is also calibrated to reality.

In many cases this is accreted by a period in which the founder CEO themselves commences their career under an iconic mentor, and as such achieving for them a much higher efficiency in acquiring the necessary information for success than would be possible through trial and error. In due course the anti-authoritarian tendency of the protégé becomes sufficient for the initiation of their own business path, on their own terms, and in the founding of the emergent company.

This path to knowledge acquisition also reduces the need for the social skill handicap that would otherwise result from the protégé's social withdrawal needed to attain a similar level of scientific, technical, or business expertise. And as we shall see, it is in social interactions that the founder CEO must also excel, demonstrating brilliant, high energy, skills as a marketeer.

Furthermore – to the extent the mentor and mother nature has gifted to the founder CEO both this self-confidence and science/technical competency, these then provide for *rational workaholism*, that is, accepting a perhaps even unreasonable workload yet with the sound assessment of a unreasonably impactful outcome.

As this quality – remarkable self-confidence yet which is also calibrated to reality – develops, a fearsomeness and indefatigability is also expressed. However, the successful founder CEO mitigates the delusional risk otherwise associated with these attributes by linking their confidence to first principles, and directly connected to the vector sum advantage of their workforce that drives their product's technological competitive advantage.

Figure 20: When an iconic mentor with advanced knowledge imparts it to a protégé, it logically boosts the latter’s self-belief, which may appear to outsiders as over-confidence yet is actually well-calibrated

“He used to say to me – listen, you have the chance to change your life, your family’s life, you could be something very special. Don’t you want to be champion? You could be champion of the world.

And I didn’t pay attention to it. But he kept on saying – really, you could be champion of the world, you could devastate the world. No man can take what you can take, you’ve just gotta believe it.

I looked at this guy, and then I started thinking – really, and I said, this guy is really crazy. But he said – he said you do what I tell you to do, and if it doesn’t work, then you can leave. So I said ok – bet.

And so I did everything he told me to, and um, I won. I won every um championship, from the amateur championships, I won all the championships.. um, I am going to cry. So um, I won every championship, um [voice breaking up], that he told me, because, he told me what do to.”

Mike Tyson on Cus D’Amato, 2008⁶³

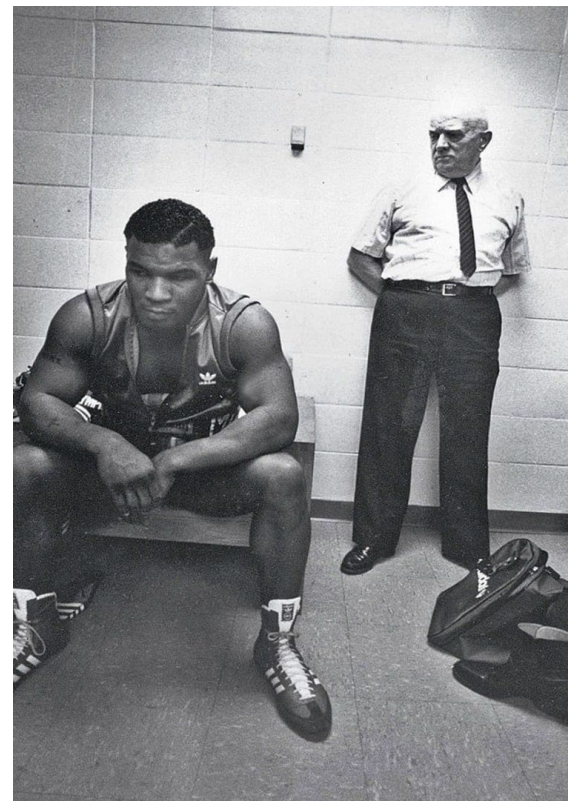


Figure 21: The successful founder CEO also exhibits fearsomeness and indefatigability, yet mitigates the delusional risk otherwise associated with these attributes by linking their confidence to first principles underpinning the vector sum advantage and technology position of their corporation

“Fearsome, you should feel a little uneasy.

If the entrepreneur makes you feel safe and calm, they are not likely to profoundly change the world.”

Peter Fenton, public comments⁶⁴

“I always say this, it’s a habit, and maybe a kind of disease.

I won’t rest until I am number one. I just hate not being first.

People want to sleep well at night, but I lose sleep thinking – ‘Why am I not yet number one, what more do I have to do’.”

Masayoshi Son, SoftBank CEO, interview in 1987⁶⁵

Interviewer: There’s the European Space Agency, Boeing, Lockheed Martin, the Chinese, the Russians?

Elon Musk: You’ve listed a wide range of entities there and I think the differences are really divergent depending upon which one you’re referring to.

Interviewer: Well let me ask you this question, who is your competition?

Musk: We have no serious competition. And if you mean who is chasing us and who and has a serious chance of catching us, then, none that I am aware of either.

Elon Musk, interview regarding SpaceX 2007⁶⁶

4.4 The founder CEO and management team possess a science/technical educational background

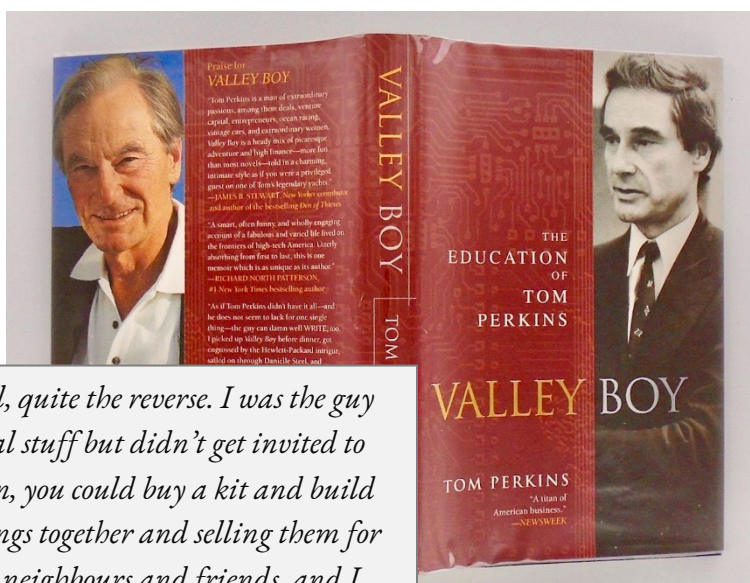
The founder CEO, whilst optimising for vector sum advantage, also possesses the knowledge themselves to directly engage in the prototypes, factory design, and end product result, that their workforce then leads the production of. To achieve this, the educational background of the founder CEO is science/technical.

“The scientist can displace the economist. It is the man who understands the future that is the man who will move up. I repeat – the man who moves up is the man who sees the future and works for it!”

Georges Doriot, Manufacturing Class Notes, Harvard Business School 1937-1966⁶⁷

The early life of Tom Perkins provides a case study of the uncommon set of conditions by which a strong technical ability, normally co-incident with social withdrawal, can also achieve a path of leadership in social situations. In Perkins’ case it was his rarely seen combination of technical interest, business instinct, and yet with natural sporting talent.

Figure 22: A strong technical ability can be co-incident with social withdrawal. Yet in the case of the uncommon set of conditions precipitating the exceptional founder CEO, technical expertise is achieved whilst maintaining social skill excellence



“I was not in any way athletic in high school, quite the reverse. I was the guy that always knew the answers to the technical stuff but didn’t get invited to the parties. But in the early days of television, you could buy a kit and build your own set. I was good at putting those things together and selling them for a profit. So I built kit television sets to sell to neighbours and friends, and I also enjoyed my own little experiments in physics, in my tiny little laboratory in my closet in my bedroom.

And when I arrived at MIT, the first weekend I was there, I tried out for the swimming team, and in the tryout I nearly broke the pool record. So of course the coach insisted I became captain of the team, and I swam for four years at MIT. I went from being a nerd in a school of jocks to a jock in a school of nerds, which was pretty amazing [chuckling]. So it changed my life.”

Tom Perkins, co-founder Kleiner Perkins, interview by Sally Smith Hughes, 2009⁶⁸

4.5 The founder CEO and management team are also brilliant, high energy, marketeers – and they determinedly hustle

“Good things come to those who wait, but only from what is left from those who hustle.”

Ken Griffin, CEO, & Co-Chief Investment Officer at Citadel, speaking in 2025⁶⁹

The final attribute that the founder CEO who optimises for vector sum advantage possesses is brilliance in high energy marketing as the public face of the business and as its iconic *bustler* generating business for its vector sum workforce to address.

Having the best product alone is insufficient: the founder CEO must also excel in marketing, including building the strongest brand. In today's increasingly networked economy, achieving early adherence is crucial for emergent businesses. Having the best product alone is insufficient: the first mover advantages dictated by the software network age has significantly amplified the importance of marketing in ensuring the success of the emergent business.

The exceptional founder CEO is observed to employ a high energy marketing strategy that includes public 'stunts', leveraging their energy and media savvy to achieve advantageous economics. This approach frequently garners front-page news coverage. Not only does this result in highly efficient marketing, but it also leaves a more memorable impression on consumers compared to the more mundane strategies employed by peers.

“Dave Packard came back, and he had a fit. He said, ‘Look, the way you get market share is you build the best product you can build, and you’ll get the market share.’

Well, you know, it doesn’t quite work that way, but anyway.

I think I originated the joke at Hewlett Packard that if we were in the sushi business, we would advertise it as ‘cold, dead fish’

[laughs] So I just changed everything. And I got full support from Dave Packard too.”

Tom Perkins, interviewed by John Hollar, 2011⁷⁰

Elon Musk, a modern archetype of an exceptional founder CEO, has employed similar 'stunt'-based marketing, such as launching a Tesla car into space in 2018 with the words "Don't Panic" from Hitchhiker's Guide to the Galaxy displayed on the dashboard. The entrepreneur combines humour, shock value, and physical stunts to maximise attention. Musk has also provocatively chosen the lettering sequence for Tesla's first three cars, comparable to Branson's use of the provocative 'Virgin' brand name.

In the case of Steve Jobs, not only did Apple deliver excellence in branding and advertising but also mastered the concept of the showman publicity event. Jobs' signature approach involved a publicly broadcast presentation revealing each breathtaking new product, a format that has since been widely mimicked across the technology industry⁷¹.

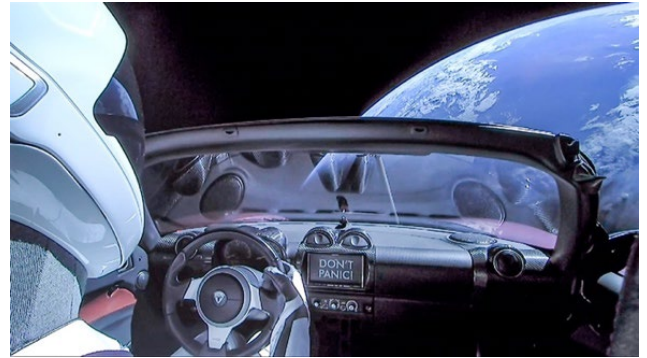
Figure 23: In 1994 Richard Branson launched Virgin Cola with a stunt driving a tank into Manhattan, and a ‘pyrotechnics up’ of the Coca-Cola sign



“I once [1994] drove a tank into Times Square — before 9/11 that is — and we had ‘pyrotechnics up’ the Coca-Cola sign the night before without telling anybody... the tank sort of went onto the sign ... it looked like the whole thing blew up when we ‘fired’ the tank and the police didn’t look too happy.”

Richard Branson, founder Virgin Group, speaking to CNBC in 2017⁷²

Figure 24: Elon Musk targets stunts in marketing: a Tesla car is launched into space; Tesla also letters its cars using a provocative marketing approach⁷³



Elon Musk @elonmusk

Subscribe

Model 3 was going to be called Model E, for obvious dumb humor reasons, but Ford sued to block it, so now it is S3X. Totally different :)

2:26 PM · Mar 24, 2017

Conclusion

The white paper has evaluated the *Vector Sum Theory of Corporate Output*, which models company success as the aggregate of individual employee vectors, combining work productivity (magnitude) with goal alignment (direction). The theory argues that maximum output occurs only when multiple high-performing individuals work in perfect alignment toward shared corporate objectives.

While Elon Musk is the theory's most prominent advocate, the insights of Charlie Munger in his later career reflect similar principles. The theory also interfaces with the *Venture Framework* – serving as its upstream component – and a number of its building blocks have been publically recognised by venture capital firms including Benchmark.

The significance of the *Vector Sum Theory* may be increasing as technological shifts reshape business growth drivers. In the 1970s, colour TV's ubiquity enabled brands to expand to national dominance, leading investors such as Warren Buffett to value brands above the focus by his mentor Ben Graham on net assets. In the 2000s, universal internet connectivity and widespread computing devices allowed the founders of emergent businesses such as Google and Amazon to build fortunes by monopolising key domains and leveraging network effects.

As outlined in our prior white paper, *A Venture Framework for the Intelligent Investor*, in the artificial intelligence “AI” era, data monopolists are positioned to become dominant by launching multiple AI-powered verticals. However, the impact of AI extends further: when highly productive individuals master AI tools, their output can increase exponentially. This may shift the Pareto principle from 20% of employees producing 80% of corporate output to an even smaller proportion of the most able workforce members becoming competent to deliver an even higher share. This amplification of productivity differentials prospectively results in the *Vector Sum Theory* becoming *the most important consideration* in business analysis.

“A company is just a particular group of people that are assembled to create a product or service. That’s the purpose of a company. People sometimes forget this elementary truth.”

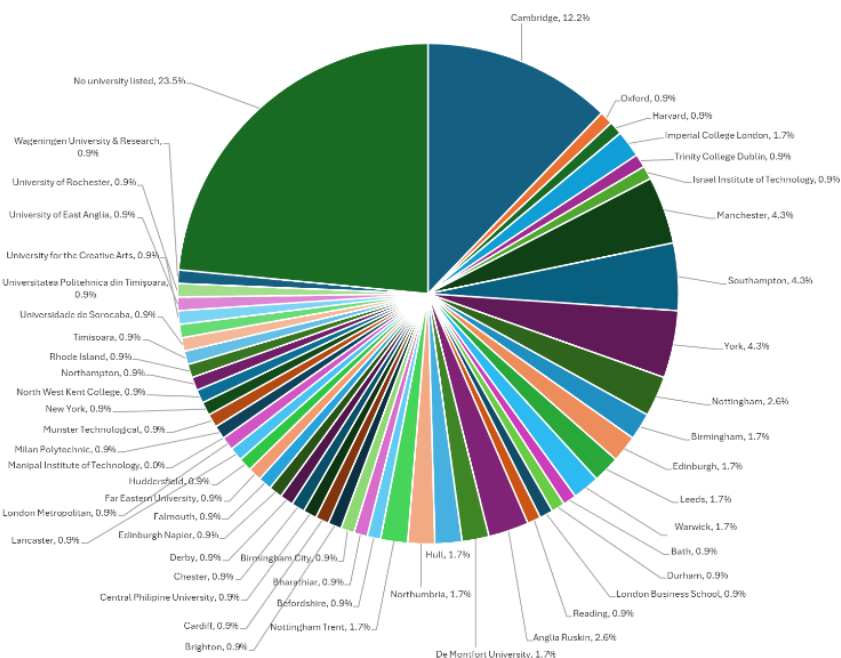
The implication is that attracting and motivating great people is critical to the success of a company. And so if you are able to get great people to join a company, and work together towards a common goal, and if you all develop a relentless sense of perfection about that goal, then you will end up with a great product. And if you have a great product then lots of people will buy it.”

Elon Musk, speaking to Auto Bild in 2014⁷⁴

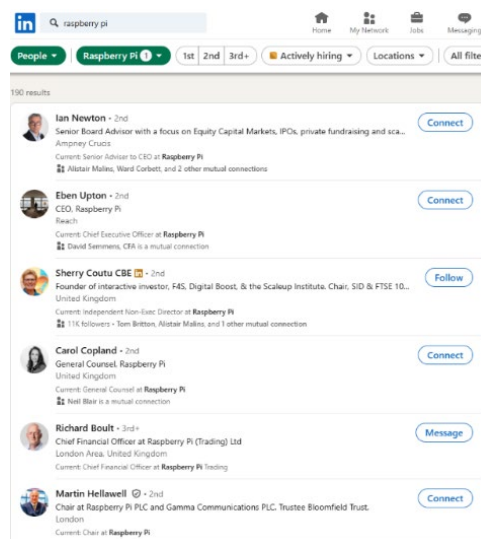
Today's significance of the *Vector Sum Theory* is also a result of the feasibility of its application from the perspective of the outside minority investor using today's publicly available, workforce-relevant data series including from services such as LinkedIn, and enhanced by AI-powered analysis tools. This stands in contrast to prior periods and underlines the importance, within the investment community, of fighting for new knowledge as to the relevant theory structures of each age. Strictly speaking this recognition is also a rejection of Elon Musk's notion of the *Vector Sum Theory* as an *elementary truth* – instead it is a *temporal truth* – yet it is a truth likely to lead to decisive advantage in the modern age. This assessment also serves as a cautionary note to those investors who sit entirely in comfort with the application of conventional frameworks to direct investment, which in most cases will still focus on trailing conditions, and conditions challenged by current technological shifts.

Figure 25: The significance today of the *Vector Sum Theory* is also a result of the feasibility of its application from the perspective of the outside minority investor by today’s publicly available, workforce-relevant data series including from sources such as LinkedIn⁷⁵

The breakdown of the workforce of Raspberry Pi by university is publically accessible data using LinkedIn



Per employee attributes go further, current role, career history, followership, as well as overall workforce retention ratios, internship to full time employee ratios, and career progression tracking



Our analysis has also put forward the comprehensive building blocks necessary for the optimisation of vector sum outputs. We believe this understanding not only represents a valuable contribution to the literature on venture investing but also, when augmented with our existing *Venture Framework* principles, can lead to significantly raised accuracy in the assessment of corporate trajectories.














Categorising the *Vector Sum Theory* building blocks in this manner also allows investors to direct with greater decisiveness the assessment criteria appropriate for both existing corporate leadership (talent attraction, workforce alignment, and duration) and as well as the optimal hiring criteria when new management talent is pursued (objective brilliance, science/technical, mission focus, self-confidence, profit orientation, and marketing). All else equal, to the extent these criteria are absent from most investment literature and as such from most business school curricula an opportunity gap exists for the thoughtful investor to act with advantage.

Our analysis also positions the *Vector Sum Theory* as upstream from the *Venture Framework* – while the latter defines output criteria, the *Vector Sum Theory* determines the pace of innovation that enables companies to both achieve and maintain those criteria. Our contention is that prioritising the *Vector Sum Theory* can significantly improve the predictive accuracy with which corporate success or fail outcomes can be ascertained.

Whilst our premise inverts traditional venture theory by suggesting that talent aggregation and its maintenance primarily precedes technological advantage, logic nevertheless dictates that our premise must be at least partially true – after all, how can technological superiority emerge without the talent to create it? More pragmatically, these processes likely reinforce each other: initial talent develops technology that attracts more talent, creating a positive feedback loop directing favourable outcomes.

Figure 26: Our analysis positions the *Vector Sum Theory* as upstream from the *Venture Framework* - while the latter defines output criteria, the *Vector Sum Theory* determines the pace of innovation that enables companies to achieve and maintain those criteria⁷⁶

Our work concludes the *Vector Sum Theory* as operating upstream..

<u>Talent attraction</u>	<u>Workforce alignment</u>	<u>Duration factors</u>	<u>The driving engine: CEO is a force of nature</u>	
<p>Excellence in attracting top talent to the venture</p> 	<p>A workforce of individuals who are alignable</p> 	<p>Strength in talent retention through workplace culture and experience delivering durable competitive advantage</p> 	<p>The founder CEO is objectively brilliant across multiple domains</p> 	<p>The educational background of the founder CEO is science/technical</p> 
<p>Successful communication of a cult-like belief in their cause</p> 	<p>A dedicated, high work rate, corporate culture</p> 	<p>A competitor set with deficiency in vector sum competency</p> 	<p>Motivated and dedicated, they believe their product can significantly improve the world</p> 	<p>The prioritisation of early profitability as a business-minded protagonist</p> 
	<p>Excellence in graduate recruitment & accelerated mentoring by senior engineers</p> 		<p>A remarkable self-confidence yet which is also calibrated to reality</p> 	<p>A brilliant, high energy, marketer</p> 

..from the *Venture Framework*

The *Venture Framework* principles (blue), build on those..

.. of the *Buffettian Approach* (green)


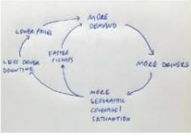








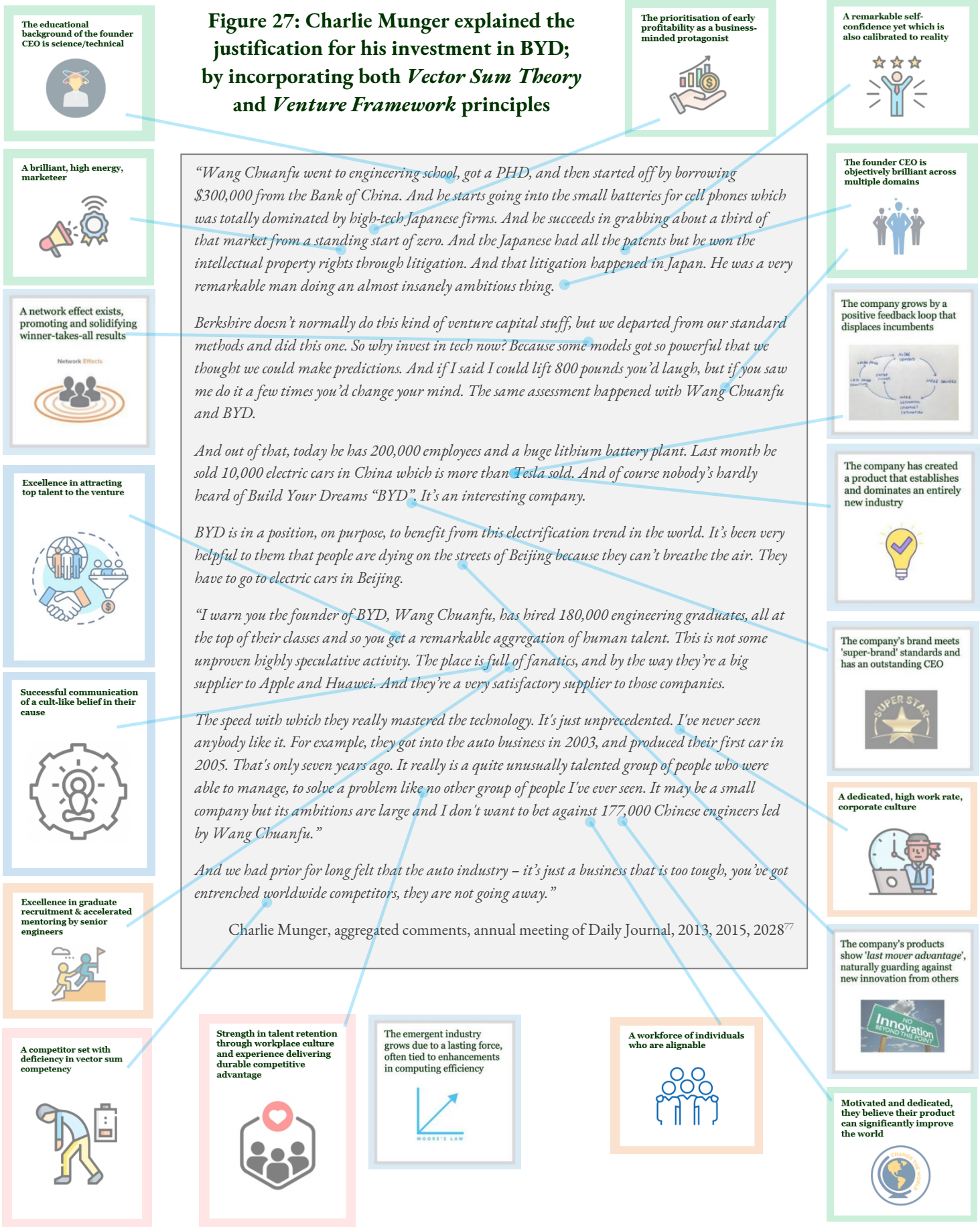
<p>The company has created a product that establishes and dominates an entirely new industry</p> 	<p>The company grows by a positive feedback loop that displaces incumbents</p> 	<p>The emergent industry grows due to a lasting force, often tied to enhancements in computing efficiency</p> 	<p>The business must be simple and understandable without reliance on trusting "expert agents"</p> 	<p>The business must be valued in terms of present value of cash return relative to cash outlay with low conditionality to macro variables</p> 
<p>A network effect exists, promoting and solidifying winner-takes-all results</p> 	<p>The company's products show 'last mover advantage', naturally guarding against new innovation from others</p> 	<p>The company's brand meets 'super-brand' standards and has an outstanding CEO</p> 	<p>A dominant company with high returns on equity, in a stable industry, with good governance</p> 	<p>A conservative financial position: low risk of the business must correspond to low risk for its equity</p> 

Figure 27: Charlie Munger explained the justification for his investment in BYD; by incorporating both *Vector Sum Theory* and *Venture Framework* principles



Peter Thiel argues in *Zero to One* that emergent businesses achieving a 10x or greater advantage “*in some dimension*” can grow disruptively at the expense of competitors. The *Vector Sum Theory* reframes his contention to focus on talent aggregation and orientation as upstream from a static assessment of technological position and as the factor that possesses the greater predictive utility from its extrapolation.

As companies optimise their vector sum productivity their advantage can increase exponentially, and thereby meeting or exceeding Thiel's benchmark of a 10x productivity advantage. This exponential growth occurs because vector sum output multiplies employee productivity by headcount and alignment, creating squared or cubed effects. Moreover, as AI advances, this exponential effect may intensify, as sophisticated AI usage by top performers further widens the productivity gap between exceptional and average workers.

For minority shareholders in public companies, *Vector Sum Theory* also offers the opportunity to substitute high resolution information relating to business trajectories – often unobtainable from a practical perspective due to inside information prohibitions – with information which is publically accessible using a combination of the knowledge of the principles detailed in this white paper, thoughtful human judgement, and from today's publicly available, workforce-relevant data series including from sources such as LinkedIn.

In this manner the astute use of the *Vector Sum Theory* can cure the handicaps that the public markets investor otherwise faces in assessing the trustworthiness of management guidance, which in selected cases can be Oscar-worthy in its sophisticated use of language to convey a trajectory differentiated from probabilistic reality.

“I do not understand why any buyer of a business looks at a bunch of projections put together by a seller or his agent – it is naïve to think that that has any utility whatsoever. We are just not interested. If we don't have any idea ourselves of what we think the future is, to listen to someone who is trying to sell us the business or get a commission on it and tell us what the future is going to be – it is very naïve.”

Warren Buffett, Berkshire Hathaway shareholder meeting, 1994⁷⁸

The *Vector Sum Theory* further bridges the gap between the *Buffettian Approach* (which favours dominant businesses with high return on equity in stable industries) and the *Venture Framework* (which attempts, albeit with thoughtful consideration, to extrapolate from initial conditions business evolution years ahead).

By combining these frameworks with the *Vector Sum Theory* a more unified approach combined with higher predictive accuracy can be achieved, and one which shifts focus first to measurable workforce information. A high-aptitude workforce with aligned incentives and strong retention rates is posited as *the most important consideration* in assessing the probability of a company continuing to succeed in adapting to a dynamically changing world, and before the investor then considers the weighting that they elect to attribute to the company's current business and technological position which will inevitably be subject to unforeseen developments.

“Our aim should not be to predict the currents that are coming, just how some things will swim in them, whatever the currents are.”

Charlie Munger, Berkshire Hathaway annual meeting, 1998⁷⁹

In this manner the *Vector Sum Theory* can also be contended as an approach that can compete with the durability of forecast that the *Buffettian Approach* and the *Venture Framework* target whilst also being more realistic in acknowledging that high-aptitude, appropriately incentivised and aligned teams will make dynamic, often unpredictable decisions that investors cannot anticipate. It is notable, for example, that almost no movie nor novel has correctly predicted the path of technology in advance, despite highly intelligent writers. Instead, *Vector Sum Theory* would advocate the more common sense forecast that these same writers would produce *profitable* scripts in the future, *based on their own human talent and that of their writing team*, rather than the unrealistic contention as to a their accurate prediction of technological trajectories from their trailing or future writing.

The *Vector Sum Theory* can also be put forward as a superior route to assess the scalability prospects of a business. Amazon's enduring success and considerable scaling was likely not entirely ascertainable from its initial, albeit advantageous, business decision to sell books online, but rather from the combination of Jeff Bezos and his founding team's aptitude, their alignment, the high retention rates maintained by the business – all of which created feedback loops sustaining durable competitive advantage. And for today's emergent companies these variables are measurable using publically available sources.

Figure 28: The *Vector Sum Theory* can also be put forward as a superior route to assess the scalability prospects of a business

“People say, how do you write a business plan?

My answer is, I can't tell you; I can only tell you how we read one. We start at the back, and if the numbers are big, we go to the front to see what kind of business it is.
[laughter]

So, I'm answering your question by saying *opportunity is the thing you look for — scale*. In other words, there is a big difference between a good idea and a good idea that will make you a huge amount of money.”

*Tom Perkins, co-founder of Kleiner Perkins, interview by Sally Smith Hughes, 2009*⁸⁰



Whilst implementing the *Vector Sum Theory of Corporate Output* still requires judgment and experience, its key contribution is in providing a structured path for evaluating traditionally intangible factors. The theory suggests that investors who achieve the identification of, and track the maintenance of, elite, well-aligned, and retained corporate talent – in each case can achieve the discovery of *exponentially special forces* possessing the ability to overwhelm *conventional armies* – and whose output thereon can deliver significantly advantaged outcomes.

Footnotes

1. Source: OpenAI Email Archives from Musk v. Altman and OpenAI blog [\[link\]](#)
2. Charlie Munger, Daily Journal annual meeting 2015 [\[link\]](#)
3. Eben Upton, CEO Raspberry Pi, H1 2024 earnings call. Source: Capital IQ transcripts
4. Georges Doriot, Manufacturing Class Notes, Harvard Business School 1937-1966 [\[link\]](#)
5. Goldman's Paulson warns of further redundancies, Financial News [\[link\]](#)
6. What Elon Musk Taught Me About Growing A Business, Dharmesh Shah, speaking in 2017 [\[link\]](#)
7. Source: OpenAI Email Archives from Musk v. Altman and OpenAI blog [\[link\]](#)
8. Source: GA-Courtenay research
- 9., 10. Figure source: Why Elon Musk's "People as Vectors" Analogy Resonates, 2018 [\[link\]](#)
11. Charlie Munger, Daily Journal annual meeting 2013 [\[link\]](#)
12. Source: public domain image
- 13., 14. The Mind and Society, Vilfredo Pareto [\[link\]](#)
15. Tom Perkins, co-founder Kleiner Perkins, interviewed by John Hollar, 2011 [\[link\]](#)
16. Zero to One: Notes on Startups, or How to Build the Future, Peter Thiel [\[link\]](#)
17. Georges Doriot, Manufacturing Class Notes, Harvard Business School 1937-1966 [\[link\]](#)
18. see, Ralph Waldo Emerson quotations [\[link\]](#)
19. see, Tesla Impact Report [\[link\]](#)
20. Tesla received 3 million job applications in 2021 [\[link\]](#)
21. US Bachelor's Degree Statistics and Facts [\[link\]](#), US Master's Degree Statistics and Facts [\[link\]](#)
22. Source: GA-Courtenay research archive
23. Charlie Munger, Daily Journal annual meeting 2018 [\[link\]](#)
24. Peter Fenton, Benchmark Partners, 2023 [\[link\]](#)
25. Starbucks founder Howard Schultz, 1999 Autobiography, Pour Your Heart Into It [\[link\]](#)
26. Steve Jobs, Apple's Think Different campaign, September 1997 [\[link\]](#)
27. The hiring philosophy of Steve Jobs, The Independent, 2017 [\[link\]](#)
28. The Structure of Scientific Revolutions, Thomas Kuhn [\[link\]](#)
29. Figure source: GA-Courtenay research
30. Peter Fenton, Benchmark Partners, interview in 2013 [\[link\]](#)
31. Charlie Munger, interview with Becky Quick, 2024 [\[link\]](#)
32. Interview with Benchmark Partners, 2022 [\[link\]](#)
- 33., 34. Source: OpenAI Email Archives from Musk v. Altman and OpenAI blog [\[link\]](#)
35. Bill Ackman, founder of Pershing Square Capital Management, speaking in 2020 [\[link\]](#)
36. Maurice Saatchi: 'Simple ideas enter the brain quicker and stay there longer.' [\[link\]](#)
37. Jeff Bezos, Amazon 1997 letter to shareholders [\[link\]](#)
38. Elon Musk, speaking in 2013 [\[link\]](#)
39. Eben Upton, CEO Raspberry Pi, H1 2024 earnings call. Source: Capital IQ transcripts
40. Tom Perkins, co-founder Kleiner Perkins, interviewed by John Hollar, 2011 [\[link\]](#)
41. Eben Upton, CEO Raspberry Pi, H1 2024 earnings call. Source: Capital IQ transcripts
42. See, GA-Courtenay white paper, *How Far Away to Berkshire Hathaway* [\[link\]](#)
43. Bill Ackman, Pershing Square Capital Management, comments made in February 2024 [\[link\]](#)
44. Charlie Munger, Wesco shareholder meeting, 2010 [\[link\]](#)
45. Tom Perkins, co-founder Kleiner Perkins, interview with Glenn Bugos, 2001 [\[link\]](#)
46. Presentation slides, Raspberry Pi, H1 2024 earnings call [\[link\]](#)
47. Warren Buffett, Berkshire Hathaway shareholder meeting, 1998 [\[link\]](#)
48. Jeff Bezos, Amazon founder and CEO, public domain interview, 1997 [\[link\]](#)
49. Jeff Bezos explains how he decided to quit his job and start Amazon [\[link\]](#)
50. Icahn's philosophy of anti-Darwinism in management [\[link\]](#)
51. Cable Cowboy: John Malone and the rise of the modern cable-TV business, Mark Robichaux [\[link\]](#)
52. Peter Fenton, arguing that the approach of great entrepreneurs is 'learn-it-all' not 'know-it-all,' 2016 [\[link\]](#)
53. Elon Musk, public comments, 2024 [\[link\]](#)
54. Charlie Munger, Practical Thought About Practical Thought, 1996 [\[link\]](#)
55. The Tragedy of the European Union, George Soros, 2014 [\[link\]](#)
56. Matt Cohler, Benchmark Partners, Silicon Slopes Tech Summit 2017 [\[link\]](#)
57. Peter Fenton, Benchmark Partners, 2023 [\[link\]](#)
58. Peter Fenton, Benchmark Partners, interview by Jeannette zu Fürstenberg, 2022 [\[link\]](#)
59. Brian Chesky, Airbnb CEO, discussing Steve Jobs, 2023 [\[link\]](#)
60. Elon Musk is stressed, says he's sleeping on Tesla factory floor, CNBC, 2018 [\[link\]](#)
61. Tom Perkins, co-founder Kleiner Perkins, interviewed by John Hollar, 2011 [\[link\]](#)
62. Peter Fenton, interview with MIT Venture Capital & Private Equity Club, 2021 [\[link\]](#)
63. Mike Tyson on Cus D'Amato, 2008 [\[link\]](#)
64. Peter Fenton, public comments, source: GA-Courtenay research archive
65. Masayoshi Son, 1987 interview with Bloomberg [\[link\]](#)
66. Elon Musk, interview regarding SpaceX, 2007 [\[link\]](#)
67. Georges Doriot, Manufacturing Class Notes, Harvard Business School 1937-1966 [\[link\]](#)
68. Tom Perkins, co-founder Kleiner Perkins, interview by Sally Smith Hughes, 2009 [\[link\]](#)
69. Ken Griffin, CEO, & Co-Chief Investment Officer at Citadel, speaking in 2025 [\[link\]](#)
70. Tom Perkins, co-founder Kleiner Perkins, interviewed by John Hollar, 2011 [\[link\]](#)
71. Steve Jobs introduces iPhone in 2007 [\[link\]](#)
72. Richard Branson, founder Virgin Group, speaking to CNBC in 2017 [\[link\]](#)
73. Elon Musk: The man who sent his sports car into space, 2018 [\[link\]](#)
74. Elon Musk, speaking to Auto Bild in 2014 [\[link\]](#)
75. Figure source: GA-Courtenay research using data from publicly available, workforce-relevant data such as LinkedIn
76. Figure source: GA-Courtenay research
77. Charlie Munger, aggregated comments, annual meeting of Daily Journal, 2013, 2015, 2028 [\[link\]](#)
78. Warren Buffett, Berkshire Hathaway shareholder meeting, 1994 [\[link\]](#)
79. Charlie Munger, Berkshire Hathaway shareholder meeting, 1998 [\[link\]](#)
80. Tom Perkins, co-founder Kleiner Perkins, interview by Sally Smith Hughes, 2009 [\[link\]](#)

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