The best leaders we studied did not have a visionary ability to predict the future. They observed what worked, figured out why it worked, and built upon proven foundations. They were not more risk taking, more bold, more visionary, and more creative than the comparisons. They were more disciplined, more empirical, and more paranoid.

The critical question is not whether you’ll have luck, but what you do with the luck that you get.

10Xers then bring this idea to life by a triad of core behaviors: fanatic discipline, empirical creativity, and productive paranoia.

Social psychology research indicates that at times of uncertainty, most people look to other people—authority figures, peers, group norms—for their primary cues about how to proceed.16 10Xers, in contrast, do not look to conventional wisdom to set their course during times of uncertainty, nor do they primarily look to what other people do, or to what pundits and experts say they should do. They look primarily to empirical evidence.

inspired standards rather than inspiring personality.

they view mistakes as expensive tuition: better get something out of it, learn everything you can, apply the learning, and don’t repeat.

“As soon as there is life there is danger.” —Ralph Waldo Emerson

Not all time in life is equal. Life serves up some moments that count much more than other moments.

They respond to unequal times with unequal intensity, when it matters most.

greatness is not primarily a matter of circumstance; greatness is first and foremost a matter of conscious choice and discipline. The factors that determine whether or not a company becomes truly great, even in a chaotic and uncertain world, lie largely within the hands of its people. It is not mainly a matter of what happens to them but a matter

CULTURE: from the Latin cultus, which means care.

group succeeds not because its members are smarter but because they are safer.

I’m giving you these comments because I have very high expectations and I know that you can reach them.

1. You are part of this group. 2. This group is special; we have high standards here. 3. I believe you can reach those standards.

all creative projects are cognitive puzzles involving thousands of choices and thousands of potential ideas, and you almost never get the right answer right away. Building purpose in a creative group is not about generating a brilliant moment of breakthrough but rather about building systems that can churn through lots of ideas in order to help unearth the right choices.

There’s a saying in the military that if you see something below standard and do nothing, then you’ve set a new standard. This is also true of culture—if you see something off-culture and ignore it, you’ve created a new culture.

In the end, the people who work for you won’t remember the press releases or the awards. They’ll lose track of the quarterly ups and downs. They may even grow hazy about the products. But they will never forget how it felt to work there, or the kind of people they became as a result. The company’s character and ethos will be the one thing they carry with them. It will be the glue that holds them together when things go wrong. It will be their guide to the tiny, daily decisions they make that add up to a sense of genuine purpose.

trust is fundamental to running any large organization. Without trust, communication breaks. Here’s why: In any human interaction, the required amount of communication is inversely proportional to the level of trust.

It’s also critical that leaders emphasize the “why” behind their values every chance they get, because the “why” is what gets remembered.

What must employees do to survive and succeed in your organization? What behaviors get them included in, or excluded from, the power base? What gets them ahead?

a key to leadership: you must be yourself.

you must accept that you can’t change reality, but you can assign it a new meaning.

Good CEOs run toward the pain and the darkness; eventually they even learn to enjoy

True storytelling is a remarkable talent in so many endeavors, but particularly in a startup, where you have so little actual proof of success in the early years on which people can base their decision to join the company. Great CEOs find a way to paint a vision for the opportunity that simply makes people want to be a part of the company-building process.

Remember, there’s no greatness in the future. Or clarity. Or insight. Or happiness. Or peace. There is only this moment.

want to learn to see the world like an artist: While other people are oblivious to what surrounds them, the artist really sees. Their mind, fully engaged, notices the way a bird flies or the way a stranger holds their fork or a mother looks at her child. They have no thoughts of the morrow. All they are thinking about is how to capture and communicate this experience.

We want to learn to see the world like an artist: While other people are oblivious to what surrounds them, the artist really sees. Their mind, fully engaged, notices the way a bird flies or the way a stranger holds their fork or a mother looks at her child. They have no thoughts of the morrow. All they are thinking about is how to capture and communicate this experience.

Treat your brain like the muscle that it is. Get stronger through resistance and exposure and training.

Most of us would be seized with fear if our bodies went numb, and would do everything possible to avoid it, yet we take no interest at all in the numbing of our souls. —EPICTETUS

“The balance he maintained between flat-out work and creative and restorative leisure is worth study by anyone holding a top position.”

“I try myself by court martial to see if I have done anything effective during the day. I don’t mean just pawing the ground—anyone can go through the motions—but something really effective.”

Charles Darwin’s daily schedule included several walks, as did those of Steve Jobs

Whether chemists, physicists, or political scientists, the most successful problem solvers spend mental energy figuring out what type of problem they are facing before matching a strategy to it, rather than jumping in with memorized procedures.

Instead of working back from a goal, work forward from promising situations. This is what most successful people actually do anyway.

I propose instead that you don’t commit to anything in the future, but just look at the options available now, and choose those that will give you the most promising range of options afterward.

An enthusiastic, even childish, playful streak is a recurring theme in research on creative thinkers.

the higher you climb, the more your success depends on making other people successful. By definition, that’s what coaches do.

Excellent teams at Google had psychological safety (people knew that if they took risks, their manager would have their back). The teams had clear goals, each role was meaningful, and members were reliable and confident that the team’s mission would make a difference.

the most important currency in a relationship—friendship, romantic, familial, or professional—is trust.

Don’t tell people what to do, tell them stories about why they are doing it.

Allow serendipity to play a role. Most of the turning points in life cannot be predicted or controlled.

I DID STAND-UP COMEDY for eighteen years. Ten of those years were spent learning, four years were spent refining, and four were spent in wild success.

perseverance is a great substitute for talent.

Any line or idea with even a vague feeling of familiarity or provenance had to be expunged. There could be nothing that made the audience feel they weren’t seeing something utterly new.

THE CONSISTENT WORK enhanced my act. I learned a lesson: It was easy to be great. Every entertainer has a night when everything is clicking. These nights are accidental and statistical: Like lucky cards in poker, you can count on them occurring over time. What was hard was to be good, consistently good, night after night, no matter what the abominable circumstances.

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The only legitimate form of discipline is self-discipline, having the inner will to do whatever it takes to create a great outcome, no matter how difficult. When you have disciplined people, you don’t need hierarchy.

Great vision without great people is irrelevant.

what is contained in a human that will not emerge until we are all interconnected by wires and politics? The most unexpected things will brew in this bionic hivelike supermind.

Economists now reckon that commercial products are best treated as though they were services. It’s not what you sell a customer, its what you do for them. It’s not what something is, it’s what it is connected to, what it does. Flows become more important than resources.

Here is the generic recipe for distributed control that Brooks’s mobot lab developed. It can be applied to most creations: 1)Do simple things first. 2)Learn to do them flawlessly. 3)Add new layers of activity over the results of the simple tasks. 4)Don’t change the simple things. 5)Make the new layer work as flawlessly as the simple. 6)Repeat, ad infinitum.

Much of our visual perception happens in the thin retina where light first strikes us, long before the central brain gets to consider the scene.

Chess, elections, races, and poker are zero-sum games: the winner’s earnings are deducted from the

“In zero-sum games you always try to hide your strategy,” says Axelrod. “But in nonzero-sum games you might want to announce your strategy in public so the other players need to adapt to it.”

a second, more important revolution piggybacked on it unnoticed. There could not have been an industrial revolution without a parallel (though hidden) information revolution at the same time, launched by the rapid spread of the automatic feedback system. If a fire-eating machine, such as Watt’s engine, lacked self-control, it would have taken every working hand the machine displaced to babysit its energy. So information, and not coal itself, turned the power of machines useful and therefore desirable.

A system is anything that talks to itself. All living systems and organisms ultimately reduce to a bunch of regulators—chemical pathways and neuron circuits—having conversations as dumb as “I want, I want, I want; no, you can’t, you can’t, you can’t.”

In complex systems a small alteration in the initial conditions can amplify into wide-ranging effects throughout the rest of the system.

Writing, he says, is a technology that is ubiquitously embedded into our environment. Writing is everywhere, urban and suburban, passively waiting to be read. Now imagine, Weiser suggests, computation and connection embedded into the built environment to the same degree. Street signs would communicate to car navigation systems or a map in your hands

nature has no garbage problem because nothing becomes waste.

To make money in the new era, follow the flow of information.

Just as the technology of printing altered and reduced the power of medieval guilds and the social power structure, so too will cryptologic methods fundamentally alter the nature of corporations and of government interference in economic transactions.

He explains the lesson from game theory concerning iterated negotiation games, like the Prisoner’s Dilemma; how payoffs shift when playing the game over and over instead of just once, and how important reputations become in iterated relationships.

All creatures on the globe at any one time are equally evolved, having engaged in evolution for an equal amount of time. To put it bluntly, humans are no more evolved than most bacteria.

in general, grandmasters (and now Deep Thought) work from rules of thumb. For instance: Favor moves that increase options; shy from moves that end well but require cutting off choices; work from strong positions that have many adjoining strong positions. Balance looking ahead to really paying attention to what’s happening now on the whole board.

My working definition of a complex system is a “thing which talks to itself.” One might ask, then: What is the story that complex systems tell themselves? The answer is that they tell themselves stories of the future. Stories of what might come next—whether next is reckoned in nanoseconds or years.

Technology, particularly the technology of knowledge, shapes our thought. The possibility space created by each technology permits certain kinds of thinking and discourages others. A blackboard encourages repeated modification, erasure, casual thinking, spontaneity. A quill pen on writing paper demands care, attention to grammar, tidiness, controlled thinking. A printed page solicits rewritten drafts, proofing, introspection, editing. Hypertext, on the other hand, stimulates yet another way of thinking: telegraphic, modular, nonlinear, malleable, cooperative.

Error, whether random or deliberate, must become an integral part of any process of creation. Evolution can be thought of as systematic error management.

THE WISDOM OF LIFE CONSISTS IN THE ELIMINATION OF NON-ESSENTIALS.

Instead of making just a millimeter of progress in a million directions he began to generate tremendous momentum towards accomplishing the things that were truly vital.

Essentialists systematically explore and evaluate a broad set of options before committing to any. Because they will commit and “go big” on one or two ideas or activities, they deliberately explore more options at first to ensure that they pick the right one later.

“What do I feel deeply inspired by?” and “What am I particularly talented at?” and “What meets a significant need in the world?”

“Warren decided early in his career it would be impossible for him to make hundreds of right investment decisions, so he decided that he would invest only in the businesses that he was absolutely sure of, and then bet heavily on them. He owes 90% of his wealth to just ten investments. Sometimes what you don’t do is just as important as what you do.”

STRATEGY IS ABOUT MAKING CHOICES, TRADE-OFFS. IT’S ABOUT DELIBERATELY CHOOSING TO BE DIFFERENT.

“There are no solutions. There are only trade-offs.”

Research has shown that of all forms of human motivation the most effective one is progress. Why? Because a small, concrete win creates momentum and affirms our faith in our further success.

Since the start of the technology age, previous generations have made their marks with iron and steel, aluminum, glass and concrete; software is our own distinctive building stuff.

It is the quality that distinguishes genius in any field. (What Newton displayed when he saw planets reeling round the sun and teardrops falling as two pieces of one picture; what Churchill showed when he grabbed for the Dardanelles to break an impasse in France; what Hamlet is transfixed by: the special providence in the fall of a sparrow…) It is the keystone of a beautifully transparent definition of philosopher: one who seeks “to transcend the world of human thought and experience, in order to find some point of vantage from which it can be seen whole.”

how the ability to make connections across disciplines—arts and sciences, humanities and technology—is a key to innovation, imagination, and genius.

Leonardo’s genius was a human one, wrought by his own will and ambition. It did not come from being the divine recipient, like Newton or Einstein, of a mind with so much processing power that we mere mortals cannot fathom

Over and over again, year after year, Leonardo lists things he must do and learn.

His ability to combine art, science, technology, the humanities, and imagination remains an enduring recipe for creativity.

Leonardo da Vinci had an instinct for keeping records. Jotting down observations, lists, ideas, and sketches came naturally.

developed his thoughts about these topics not just from his own experience and reading; they were formulated also through conversations with friends and colleagues. Conceiving ideas was for Leonardo, as it has been throughout history for most other cross-disciplinary thinkers, a collaborative endeavor.

Such obsession is a component of genius.

When Leonardo was summoned by the duke, they ended up having a discussion of how creativity occurs. Sometimes it requires going slowly, pausing, even procrastinating. That allows ideas to marinate, Leonardo explained. Intuition needs nurturing. “Men of lofty genius sometimes accomplish the most when they work least,” he told the duke, “for their minds are occupied with their ideas and the perfection of their conceptions, to which they afterwards give form.”

This inability to ground his fantasies in reality has generally been regarded as one of Leonardo’s major failings. Yet in order to be a true visionary, one has to be willing to overreach and to fail some of the time. Innovation requires a reality distortion field. The things he envisioned for the future often came to pass, even if it took a few centuries.

One mark of a great mind is the willingness to change it. We can see that in Leonardo.

“Talent hits a target that no one else can hit,” wrote the German philosopher Arthur Schopenhauer. “Genius hits a target no one else can see.”

curiosity impelled him to become among the handful of people in history who tried to know all

His curiosity impelled him to become among the handful of people in history who tried to know all there was to know about everything that could be known.

he was self-taught and willed his way to his genius.

“Men of lofty genius sometimes accomplish the most when they work least,” he explained, “for their minds are occupied with their ideas and the perfection of their conceptions, to which they afterwards give form.”

Make lists. And be sure to put odd things on them. Leonardo’s to-do lists may have been the greatest testaments to pure curiosity the world has ever seen.

Berners-Lee saw his new Internet protocol as an improvement on top of the existing structure of the Internet itself. He built the web upon previous conceptual and philosophical notions (hypertext, cyberspace, collaboration) to create what was really a new medium. In his Usenet post announcing the web, Berners-Lee declared, “The WWW project merges the techniques of information retrieval and hypertext to make an easy but powerful global information system.”

Bina wrote the majority of the original code, but the features were also what made their browser such a leap forward, and it was Andreessen who was coming up with the features.

Early on, a dozen purchases constituted a good day. But that was a good thing because everything was being done by hand. When an order came in, Amazon turned around and ordered the book from the distributor, who shipped the book to Amazon’s meager offices. Then, the handful of Amazon employees, Bezos and Kaphan included, reboxed the books and shipped them to customers. The company had one public-facing email address and all the employees would take turns responding to customer inquiries.

“Jeff was always an expansive thinker, but access to capital was an enabler,” Doerr has said of Bezos.

something the Internet had been very good at from its inception: providing a platform for niche interests.

Page and Brin were almost manically focused on endlessly iterating and improving upon their Big Idea, making sure it was the most comprehensive, reliable and—most important—speedy search engine in the world. Nothing Google did in its first years distracted the company from improving on its core product.

When studying the “Facebook trance,” the one that led users to click, click, click, Zuckerberg and the others saw that the reason people got so sucked in to the site was that they had to surf around to find out what had changed on every friend’s profile page. Users seemed to be most interested in learning what was new. Heck, every time a user simply changed their profile picture, Facebook’s engineers could see in the logs that that led to an average of twenty-five new pageviews.61 If Facebook’s key value proposition was the ability to find out what was up with your loved ones, then maybe they could design a better delivery system for this information. This would become the News Feed.

Communication, as it so often did over the course of the Internet Era, proved to be the killer application for mobile computing.

The problem of the phone accidentally turning on in a user’s pocket was solved when a UI designer noticed the sliding lock and unlock mechanism on airplane bathroom doors. Thus, “slide to unlock” was born. Small but meaningful details were added as a result of the dogfooding feedback; details like a ringer switch to silence phone calls that came at inopportune times.

I have identified seven elements essential to Apple’s software success: Inspiration: Thinking big ideas and imagining what might be possible Collaboration: Working together well with other people and seeking to combine your complementary strengths Craft: Applying skill to achieve high-quality results and always striving to do better Diligence: Doing the necessary grunt work and never resorting to shortcuts or half measures Decisiveness: Making tough choices and refusing to delay or procrastinate Taste: Developing a refined sense of judgment and finding the balance that produces a pleasing and integrated whole Empathy: Trying to see the world from other people’s perspectives and creating work that fits into their lives and adapts to their needs

Whenever Steve reviewed a demo, he would say, often with highly detailed specificity, what he wanted to happen next. “Add more space between these two elements,” or “Replace the green in this graphic with blue,” or “None of this is working. Show me more options next time.” More generally, he was always trying to ensure the products were as intuitive and straightforward as possible, and he was willing to invest his own time, effort, and influence to see that they were.

such bursts of insight don’t matter that much in the big picture. For Edison, it was more important to build on promising ideas and keep working and working until an invention was made real.

Three weeks or a month before the keynote itself, Steve would start rehearsing with portions of his slide deck in some venue at Apple, often in Town Hall, the auditorium on the Infinite Loop campus. Slowly, day by day, he would build the show by stepping through it as he wanted to present it at the keynote. This was one of Steve’s great secrets of success as a presenter. He practiced. A lot. He went over and over the material until he had the presentation honed, and he knew it cold.

In any complex effort, communicating a well-articulated vision for what you’re trying to do is the starting point for figuring out how to do it.

Steve and Scott wanted this new feature. If Apple was going to deliver it, someone had to “sign up” for the work and get it done.

Steve said: “I think if you do something and it turns out pretty good, then you should go do something else wonderful,

Steve said: “I think if you do something and it turns out pretty good, then you should go do something else wonderful, not dwell on it for too long. Just figure out what’s next.”

Exactly how we collaborated mattered, and for us on the Purple project, it reduced to a basic idea: We showed demos to each other. Every major feature on the iPhone started as a demo, and for a demo to be useful to us, it had to be concrete and specific.

I came to the conclusion that designing an excellent user experience was as much about preventing negative experiences as facilitating positive ones. It couldn’t be an even trade-off either. Great products make people happy almost all the time and do the opposite rarely, if at all.

Steve Jobs once said, “Design is how it works.” In fact, this is my favorite thing I ever heard him say,

We used the word “heuristics” to describe aspects of software development that tip toward the liberal arts. Its counterpart, “algorithms,” was its alter ego on the technical side. Heuristics and algorithms are like two sides of the same coin. Both are specific procedures for making software do what it does: taking input, applying an operation, and producing output. Yet each had a different purpose.

twenty-five people are listed as inventors on the ’949 Patent for the iPhone.

our decisions are always bets. We routinely decide among alternatives, put resources at risk, assess the likelihood of different outcomes, and consider what it is that we value. Every decision commits us to some course of action that, by definition, eliminates acting on other alternatives.

the smarter you are, the better you are at constructing a narrative that supports your beliefs, rationalizing and framing the data to fit your argument or point of view.

Aldous Huxley recognized, “Experience is not what happens to a man; it is what a man does with what happens to him.”

Treating outcome fielding as bets constantly reminds us outcomes are rarely attributable to a single cause and there is almost always uncertainty in figuring out the various causes.

Nietzsche said that remorse was “adding to the first act of stupidity a second.”

“Every 10-10-10 process starts with a question. . . . [W]hat are the consequences of each of my options in ten minutes? In ten months? In ten years?”