

The Best Product? A Great Team

In an interview with Walter Isaacson, Steve Jobs claimed that his greatest product was Apple the organization.

*I [Walter Isaacson] once asked Steve Jobs, you know, what product are you proudest of? And I thought he might say the iPod or the iPhone or the iPad, whatever, the Mac. He said, “You know, making a product is hard but making a team that can continually make products is even harder. The product I’m most proud of is Apple and the team I built at Apple.”*¹

This is an amazing testament, from the greatest product man of all time, to the difficulty of constructing *sustainably* high performing teams which go all-in and stay all-in. One-time success can happen by chance, but sustainable greatness cannot. It is one of the most difficult accomplishments and the hallmark of something truly special.²

Besides Apple, ARPA (Advanced Research Projects Agency) and Xerox PARC (Palo Alto Research Center) are some of the most storied and legendary tech teams of all time – consistently turning out products and services which have become ubiquitous in our everyday lives such as personal computers, the graphical user interface, the mouse, and what eventually became the internet.³

Mitchell Waldrop's *The Dream Machine* is an incredibly fun read which dives deeply into the details of the people, history, and aura around the ARPA and PARC teams.⁴ At the helm of these teams were JCR Licklider and Bob Taylor, respectively, and they exhibited some commonalities which I sense are key to all *consistently* high-performing teams (tech or otherwise):

1. Getting the air right
2. Attracting, retaining, and inspiring the best people, and then giving them the freedom and autonomy to run
3. Providing a grand vision which get people to go all-in
4. Creating a self-sustaining and self-organizing group that can prosper even when the leader steps away.
5. Invert! Always Invert

¹ [Big Think: Walter Isaacson on Steve Jobs' Favorite Product: The Apple Team](#)

² In addition, the culture found in great organizations is far harder to duplicate than nearly anything else, including product, distribution, technology, processes, systems, etc. and is why it is an enduring competitive advantage. When a company's cultural atmosphere is properly aligned with human nature, it can act as a fountainhead for continued innovation. It is difficult to measure and never shows up on a balance sheet, but it is ever important.

³ Engelbart's "[Mother of All Demos](#)" is a mind-blowing technology demonstration which incorporates the then-nascent technology and sets fire to the vision of the future and what could be.

⁴ Amazon Link to [The Dream Machine](#) (non-affiliate) and [my notes on the book](#)

A checklist, while helpful and easy to digest, implies a linear and straightforward model, and building out a world-class team is anything but. This list is not exhaustive (of course) but these essential elements must be considered, juggled, and honored if your team is to stand a chance of surviving time, competition, or entropy of any sort.

Getting the Air Right

“Getting the air right” means creating and fostering the right environment, the right culture. It is arguably the most important job as a leader. If the culture isn’t right, it will be challenging to *sustainably and reliably* achieve anything of lasting meaning. Lick, as JCR Licklider’s friends knew him, was exceptional at this.

*“You always got the sense that Lick was playing. He was like a kid in a candy store. His exploratory and curious child-like mind never went away. He was not suited to be an administrator or manager but was a visionary and community builder. He encouraged people and showed them what was possible, what they were really working towards.”*⁵

“Lick was interested in every domain and was always pulling in new ideas from different fields. He loved novel ideas and would always push himself and others to think about things differently in order to gain new or deeper insights.”

When this mentality is exhibited by the leader, it provides tremendous freedom to the rest of the team. It lets people relax and become more collegial and open. It reduces the fear of failure, stress, and the “need” for outsized results. Life becomes more playful, flexible, organic, and fun – all key attributes and mindsets when striving to accomplish something significant.⁶

While Lick was playful and creative, he also had a hard side and had high expectations of his team. He gave his people plenty of space as long as they were doing something interesting and living up to his high standards. However, if not, he could be ruthless and shut down programs that weren't performing. Even in these difficult situations, his team always knew that he was extremely devoted and deeply cared – *“he had built a tribe more than a research group.”* History clearly shows that when leaders possess solid, authentic, human qualities, like trust, vision, and care, their groups tend to go all-in, and stay all-in.

*My ego demands – for myself –
the success of my team.*

– Bill Russell

Another remarkable attribute of Lick’s was his lack of personal ego. Lick optimized for group creativity and productivity and cared very little for personal credit. He would give his ideas and insights away for others to work on and publish so that the group as a whole could get more done.

⁵ Quotes within the body of the article are from Waldrop’s *Dream Machine*

⁶ See [Effortless Mastery](#) and [The Art of Learning](#) for further details on the process of learning and mastery.

A great leader is one of the rarest commodities on earth. Humans are hard-wired to seek them out and, when found, are willing to “walk through walls” for them. Lick, although he was a terrible manager, had enough of the required traits to get the air right, attract the best people, and set the vision.⁷

It is amazing what you can accomplish if you do not care who gets the credit.

– Harry S Truman

The Best People

The first high-profile project Lick worked on was related to acoustics for WWII. His boss had a simple mantra, “*hire the best people, buy them the best machines money can buy, inspire them to no end, and work them 14 hours a day.*” This mantra worked for Lick and it later influenced how he built out and ran his teams. Most people want to work on meaningful problems, with quality people, where they can learn, grow, and impact the world in some positive way. In addition to all this, Lick gave his people trust, freedom, and autonomy, and made sure to reduce bureaucratic frictions so that these top people could spend as much of their time working on important problems rather than on less important administrative tasks. This focus on working on the most important problems in their field, surrounded by the best people, with a bias for speed, created a “black hole” of sorts at ARPA, starting a positive feedback loop. ARPA was able to attract high quality people as they knew that they would be able to work on the most important problems with less red tape. This attracted other great people, which allowed for more innovation, which further attracted the best talent, and so on.

Alan Chynoweth mentioned that I used to eat at the physics table. I had been eating with the mathematicians and I found out that I already knew a fair amount of mathematics; in fact, I wasn't learning much. The physics table was, as he said, an exciting place, but I think he exaggerated on how much I contributed. It was very interesting to listen to Shockley, Brattain, Bardeen, J. B. Johnson, Ken McKay and other people, and I was learning a lot. But unfortunately a Nobel Prize came, and a promotion came, and what was left was the dregs. Nobody wanted what was left. Well, there was no use eating with them! Over on the other side of the dining hall was a chemistry table. I had worked with one of the fellows, Dave McCall; furthermore he was courting our secretary at the time. I went over and said, “Do you mind if I join you?” They can't say no, so I started eating with them for a while. And I started asking, “What are the important problems of your field?” And after a week or so, “What important problems are you working on?” And after some more time I came in one day and said, “If what you are doing is not important, and if you don't think it is going to lead to something important, why are you at Bell Labs working on it?” I wasn't welcomed after that; I had to find somebody else to eat with!

– Richard Hamming, [You and Your Research](#)

⁷ In the same Isaacson interview referenced in footnote 1, a colleague of Jobs said, “There were people who were so loyal to Steve they would walk through walls for him. He developed around him the tightest, most loyal, most integrated team in Silicon Valley.” People have called this a “reality distortion field” and this helped Jobs get his teams to go all-in.

Setting the Vision

Without a vision others can get behind and fight for, a strong culture and the best people will do less than they otherwise could. In ARPA's case, Lick was far ahead of his generation in seeing the computer's potential – for making computers “humane” and individual and in democratizing access to information. His vision and treatises on human/computer symbiosis shifted people's understanding of what computers were and could be. It was this vision and how confidently and clearly he could explain it to others that got them to go all-in.⁸

“Lick may have been one of the most intuitive geniuses of all time. He simply saw in his head how information flowed, and how people, things, and ideas were interconnected. It was this vision and his commitment and utter belief in this future which fueled the fire for these teams and helped them achieve what they did.”

“Lick, while humble and nice, hated sloppy work, glib answers, and never took anything for granted. He was mischievous and a little anarchical. He was never satisfied with the ordinary and always pushed the limits. His grounding in psychology was essential for his later work with computers as he always tried to design the computer and how it functioned to best meet the needs of the humans operating it. Lick approached every problem as a systems problem rather than a detailed or individual problem.”

In addition, Lick and ARPA were in a fortunate position as there was no budget, no mandate, no charter. This was perfect as they could simply talk about and work on the most important questions and topics as they came up, without being pigeonholed or arbitrarily assigned a specific purpose. Instead, they were able to adjust, adapt, and evolve to the constant technological change that was happening. The ability to grow organically towards what was most promising without having to meet financial targets or milestones gave the team the freedom to pursue what became most viable and exciting given other breakthroughs. This was incredibly powerful and unusual. Most other large groups in a similar position must formalize and specifically layout what their targets are, in what timelines they will be met, and why. These groups end up running the business

⁸ [The Computer as a Communication Device](#) and Man-Computer Symbiosis (both found in the same link) by JCR Licklider are outstanding examples of how Lick was able to clearly articulate his vision. The win-win symbiosis he discusses in *Man-Computer Symbiosis* regarding the fig tree and fig wasp is beautiful: *The fig tree is pollinated only by the insect Blastophaga grossorun. The larva of the insect lives in the ovary of the fig tree, and there it gets its food. The tree and the insect are thus heavily interdependent: the tree cannot reproduce without the insect; the insect cannot eat without the tree; together, they constitute not only a viable but a productive and thriving partnership. This cooperative “living together in intimate association, or even close union, of two dissimilar organisms” is called symbiosis. “Man-computer symbiosis” is a subclass of man-machine systems. There are many man-machine systems. At present, however, there are no man/computer symbioses. The purposes of this paper are to present the concept and, hopefully, to foster the development of man-computer symbiosis by analyzing some problems of interaction between men and computing machines, calling attention to applicable principles of man-machine engineering, and pointing out a few questions to which research answers are needed. The hope is that, in not too many years, human brains and computing machines will be coupled together very tightly, and that the resulting partnership will think as no human brain has ever thought and process data in a way not approached by the information-handling machines we know today.*” Great businesses mimic the symbiosis found in nature – creating win-win outcomes for all relevant counterparties.

plan rather than the business itself, tying them down and not allowing them to adapt to the situation and context at hand. Lick and ARPA were able to take advantage of a fundamental business and innovation principle: *It is all about preparation, not prediction.*⁹ They were always in a position to act on new developments and made no effort to predict why, when, or how it would happen. This gave them flexibility and the ability to act faster than anybody else.

Even though Lick was admittedly a terrible manager, his vision, technological prowess and the culture he created allowed him to train, mentor, and inspire many of the people at ARPA who later went on to establish and lead Xerox PARC, including Bob Taylor.¹⁰ PARC was an Eden in many ways but what allowed them to flourish was the vision, the people, and an *abundance mentality*. The team had money to spend thanks to Xerox's cash cows and they didn't have to jump through hoops to get it.¹¹

“When there is scarcity you don't have a community, you just have a bunch of people trying to survive.”

An unbelievable “leaping emergent” effect occurs when a team goes all-in. This non-linear outcome can occur when you have trust, a vision, autonomy, ownership, and a win/win mindset, and ARPA and PARC were able to tap into that.

“PARC would rationalize what they were working on according to what Xerox needed but whenever they could phrase an idea to align with this path everybody's eyes would light up, hitting a sort of resonance frequency.”

Beyond the Leader

I believe that the truly effective leader sets their group up for success even as they step away – *especially* when they step away. There are many methods, but steps must be taken while the key leader is still actively involved to make sure that a robust, self-organizing, self-reinforcing, autocatalytic environment is in place.¹² There is of course no guarantee, and history shows how difficult it is to create any sort of lasting greatness, but this mindset at least gives you a better chance to sustainably outperform.¹³

⁹ [A Treatise on Efficacy](#) is the best book I've read on this concept

¹⁰ [Bob Taylor's Wikipedia page](#)

¹¹ Even these dominant cash cows eventually get disrupted: “In 1975 Xerox's printer and copier business was being threatened and this was their cash cow. The instinct is to keep pouring money into what has historically been profitable in order to save it but sometimes it isn't appropriate. *You must know when to cannibalize or disrupt yourself.*” (from Waldrop's *The Dream Machine*)

¹² For example, [Kiewit](#) has a mandate that all senior leaders are responsible to hire and train their successor

¹³ Very interesting side note: Alan Kay mentions that in the history of art, it is not the adults who actually invent the new medium who do amazing things, but the first generation of kids to grow up with it who do.

“Lick at ARPA and Bob Taylor at PARC had to learn how to find a way to get their groups all to move together, to give their groups a sense of cohesion and purpose without crushing their spontaneity and creativity. They had to set things up and create an environment where their people would follow their own instincts and self-organize. This is a fundamental dilemma of management and Lick and Taylor tackled it in different ways.”

Lick’s key realization was that if his visions were to come to fruition, he had to create a self-reinforcing and self-sustaining community between all the different groups who contributed to these projects. This would create a more robust, sustainable team, allowing ARPA to prosper even after Lick or other key members stepped away. Lick openly acknowledged the importance of acquiring his successor, Ivan Sutherland:

“I think maybe the best thing I did was to pick a successor, Ivan Sutherland, who was surely more brilliant than I and very effective, and who carried it on. I think that the main thing ARPA has had is a series of good people running an office, and a fantastic community. I guess that’s the word. It was more than just a collection of bright people working in the field. It was a thing that organized itself a little bit into a community, so that there was some competition and some cooperation, and it resulted in the emergence of a field.”

Bob Taylor tried to solve for this by spending years traveling and getting to know the cultures of different high performing groups and he took the time to speak to the youngest people there. Not only to pick their brains, but to understand what they valued and how he could cater to them. Taylor’s style of research can be summed up as:

“Don’t just invent the future, go live in it.”

“Don’t worry about the cost for now but whatever you invent, make sure to use it and then show others how to use it and why it’s helpful.”

“I never allow myself to have an opinion on anything that I don’t know the other side’s argument better than they do.”

— Charlie Munger

The *only* mandatory program Taylor initiated at PARC was a once weekly discussion from the program leaders about what they were doing and for an hour, the other leaders would have at them. This created a sense of cohesion and purpose and also flushed out ideas they went too far along the wrong path. These meetings often got heated and Taylor would help turn them from "class 1" to "class 2" meetings, meaning they would go from yelling at each other (class 1) to having to explain the other side’s position to their satisfaction (class 2). This worked amazingly well to flush out ideas and improve communication.

Invert! Always Invert

As important as what to do is what not to do, and the rise and fall of Xerox PARC has several archetypal examples that we can learn from.

“Xerox was growing so quickly in the late 1960s and 1970s that they almost choked on their own growth. In order to survive, they had to bring in management, marketing, and finance types – mostly from IBM and Ford. Jim O’Neil became the numbers guy and shut down much of the spontaneous generation and innovation because if it didn’t meet his numbers, he couldn’t “see it” and wouldn’t buy into it. While this helped them survive their amazing growth, it also reinforced some bad lessons – that nothing exists or is useful unless it can be shown and captured on a spreadsheet. Eventually this led to the demise of Xerox PARC and a golden era of research and innovation. When sales and finance make all the shots, the company is on a downward spiral as they are not able to innovate or think long term.”

Why do people leave an organization? I always thought that low pay would be the first reason, but in fact it was the fifth. The top reason was not being treated with respect or dignity; the second was being prevented from making an impact on the organization; third, not being listened to; and fourth, not being rewarded with more responsibility.

– Michael Abrashoff

Apple, ARPA, Xerox PARC, and select others have been able to tap into, funnel, and incentivize human nature, enabling them to create nimble, innovative, and thriving organizations. While inspiring, it is also humbling. History has shown how difficult it is to be at the top of the game for any sustained period of time. As organizations grow, they sow the seeds of their own demise. On the flipside of every strength lies a weakness. This pendulum of life holds as true for these organizations as any other, but their very existence and the commonalities they share should be encouraging – they show us it is possible to change the world and put off the powers of creative destruction for long periods of time.