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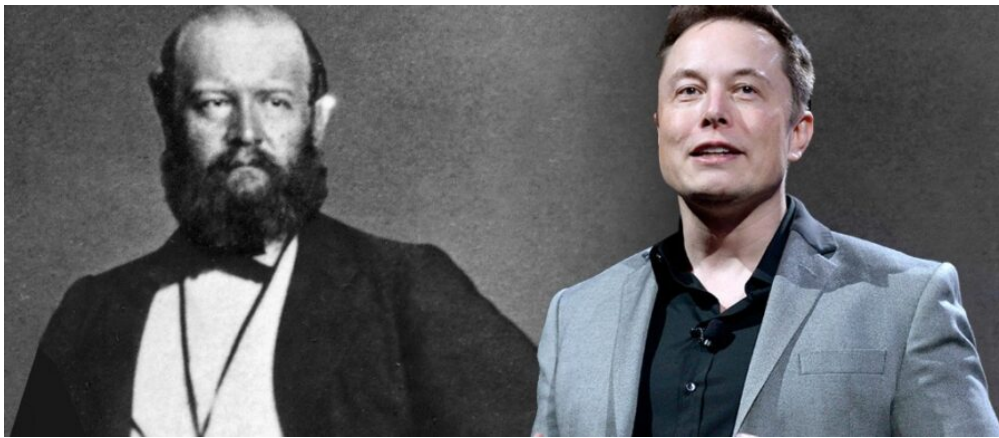
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## Why Elon Musk Is Like Alfred Escher

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Tesla is worth more than other major U.S. automakers despite having a fraction of their sales. A Silicon Valley venture capitalist explains why he believes Tesla is still undervalued.



### ● LEADERSHIP

*Electric-car maker Tesla is worth more than Ford, GM or Fiat Chrysler, despite booking only a fraction of Big Auto's sales and losing boatloads of money. Philipp Stauffer, co-founder and managing director of FYRFLY Venture Partners, who is an investor in Tesla, argues in this opinion piece that the company still is significantly undervalued. He sees Tesla's market cap rising to 10 times the current level in a decade. Stauffer considers Musk one of those rare entrepreneurs who boldly move mountains to accomplish a grand vision for the good of society. He compares Musk to Alfred Escher, who transformed Switzerland from a backwater country to a model of modern development today.*

In June, I read Silicon Valley entrepreneur Steve Blank's arguments about why Tesla is worth \$60 billion despite losing \$700 million in 2016. It felt like déjà vu. For five years, I have tried to explain to value investors why Tesla is undervalued, not overhyped. (I am an investor in Tesla.)

Tesla's market value of \$60 billion is *conservative*, in my view. I believe that Tesla will grow to 10 times its market cap within 10 years — or go bust and be worth nothing. I give the “10x” scenario a 90% probability and the belly-up scenario a 10% chance. I base that argument on the remarkable achievements of Alfred Escher, a 19<sup>th</sup> century entrepreneur known as the father of modern Switzerland.

If you are a traditional investor pitting Tesla against Volkswagen, Toyota, General Motors, or other conventional automaker ‘rivals,’ you misunderstand the company. We underestimate entrepreneurs like Elon Musk, Tesla's founder and CEO, because we don't have any good comparisons in this lifetime. Tesla is not a typical firm, and Musk is not a typical entrepreneur. He is more of a value-chain architect, and so was Escher.

If you want to understand why Tesla is on track for 10x in 10 years, Escher is the best comparison. And if you want to understand why I give Musk a 10% chance of failing, Escher is also the best comparison — more so than other business titans such as Andrew Carnegie, J.P. Morgan or John D. Rockefeller.

## **A Swiss Legend**

I moved from Switzerland to Silicon Valley in 2001 to follow my passion for innovation and entrepreneurship and to build a bridge between these entrepreneurial communities. Last winter, my father, who has been a small business owner in Switzerland for most of his life, visited me in the Bay Area. One evening over a game of chess, he asked me, “What is early-stage investing?”

**“I believe that Tesla will grow to 10 times its market cap within 10 years — or go bust and be worth nothing.”**

Sparing him a detailed explanation, I said that we look for entrepreneurs who are building companies that have the potential to transform industries, cultures, and societies. We identify them early so that we can invest small amounts of capital for a potentially massive impact and return.

“Ah, I get it,” said my father. “You’re looking for the next Alfred Escher.” My father summed up his opinion with a name that few Americans know. Indeed, I have been searching for other Alfred Eschers and found Musk — but it was way too late for me to become an early-stage investor.

### **Value Chain Entrepreneurs**

Scientists who study natural disasters categorize floods by their probability of happening over a given timespan. A 100-year flood, for example, is a flood that has a 1% probability of occurring in any given year. I use a similar system for entrepreneurs. Musk and Escher are

100-year entrepreneurs. More specifically, they are what I call Value Chain Entrepreneurs. Four attributes distinguish Value Chain Entrepreneurs from other types.

- First, their “problem statement” addresses a dizzyingly complex issue that seems unsolvable to others but that they deem *must* be solved. Not solving the problem will have severe and unpredictable consequences.
- Second, no single company, project or category can solve the problem. Rather, the solution requires the introduction of a new or significantly changed value chain — a new series of activities (usually performed by firms) that add value to society.
- Third, the Value Chain Entrepreneur often operates multiple companies in parallel to construct that value chain. Of course, this produces voids and vacuums that the entrepreneur cannot address alone.
- Fourth, the Value Chain Entrepreneur always threatens powerful incumbents. Thus, he or she must influence policy to achieve acceptance and regulatory support for the new value chain. So they become active in politics

out of necessity to change the social contract that sustains the incumbent value chain.

Value chain creation and therefore disruption looks chaotic because it creates a wild-west environment of sorts. The 19<sup>th</sup> century oil craze, for example, created a semi-lawless industry depicted brilliantly in the movie “There Will Be Blood.” The chaos resulted in one man, John D. Rockefeller (1839–1937), controlling 90% of the U.S. oil market at one point.

But then the U.S. Supreme Court found his company, Standard Oil, guilty of violating antitrust laws. The consequent breakup and regulation created all the precursor firms to today’s giants (ExxonMobil, Conoco, Chevron and others). The hydrocarbon value chain went on to shape a century of international politics, economic development, and material culture. Many products trace some part of their value chain to hydrocarbons.

Now, Musk is ready to demolish hydrocarbons with a sustainable energy value chain, which sounds impossible in a world still running on that fossilized organic matter. But again, Value Chain Entrepreneurs try to solve problems that almost nobody else dares to touch. *Not* solving the problem is not an option, however, because they see failure as an existential threat — to the world in Musk’s case and a nation in Escher’s.

### **Switzerland’s Existential Problem**

Escher was a hybrid entrepreneur with elements of 19<sup>th</sup> century German statesman Otto von Bismarck and John D. Rockefeller combined — a politician in the realpolitik tradition who also built a

business empire. Despite Escher's status as a Swiss national hero, historians have written little about him, especially in English. Most of the details about Escher's life come from Joseph Jung's book, Switzerland's Success Story: The Life and Work of Alfred Escher (1819 – 1882).

In the first half of the 19<sup>th</sup> century, Switzerland had few of what Harvard professor Michael Porter calls “competitive advantage of nations.” Landlocked in Europe, Switzerland is the origin of four major river valleys: the Rhône, Rhine, Aare, and Thur. The Alps historically made Switzerland difficult to invade or cross. The combination of mountains and rivers earned Switzerland the nickname “Water castle of Europe.” But the geography divided the territory into German-, French-, and Italian-speaking enclaves, which, as nation builders will tell you, isn't ideal for national unity. Although the Swiss Confederation dates to 1291, Switzerland in the 19<sup>th</sup> century was still a young, direct-election democracy plagued by internal conflicts.

Escher was born in 1819 to an outcast aristocratic family in Zurich. France, under Napoleon Bonaparte, had just failed in its latest attempt to conquer Eurasia (1815), and the continent was recovering. Switzerland, despite some progress in manufacturing and a worldwide reputation for watchmaking, was a laggard in the industrial economy. More than half of the national workforce was employed in agriculture at low productivity or subsistence levels. Even worse, railroads, arguably the most important technology of the day, were almost nonexistent.

In 1850, the United Kingdom already had 10,000 kilometers of train tracks, Germany had 6,000, and France had 3,000. Switzerland had a total of 23 kilometers of tracks. Switzerland lacked the infrastructure for an industrial value chain when Escher entered the University of Zurich in 1837 and earned the institution's first doctorate in law. Despite wanting to become a scholar, he was nudged into local politics at age 26, winning a seat in Zurich's cantonal parliament in 1844. He did almost too well and rose to the role of president of the National Council in 1849 for the first of four terms, which is still a national record.

**“Musk and Escher ... are what I call Value Chain Entrepreneurs.”**

Escher feared that Switzerland would fall prey to its neighbors given the weak economy and poor transportation infrastructure. His mission, put simply, was to make Switzerland an important and respected nation. So, Escher seeded value chains that created new profit pools that benefit Switzerland to this day. Now that we have the context, we can investigate how he did it, and why his story applies to Musk and Tesla.

### **A Means to Greater Ends**

Musk creates and funds businesses to establish value chains, instead of merely competing in one industry. Escher did the same. Both had objectives beyond profitability and political influence. Escher knew that Switzerland would remain a backwater without a railroad tunnel through the Gotthard Pass, the only traversable North-South route through the Alps. Businesses were shipping goods through

France, Austria, and Italy to circumvent the Alps, and doing so cost much more money than taking a direct route. A tunnel through the Gotthard Pass would make Switzerland indispensable to Europe's industrial economy. All goods passing between northern and southern Europe would go through the Gotthard Tunnel if it existed.

As Swiss politicians debated options for building such a railway, Escher advocated for private ownership and construction instead of a government project. Soon after winning that debate, in 1853 he launched Schweizerische Nordostbahn, a railroad company that could win the now-available government contracts. To be sure, a politician leaving office to privatize railroads and start a railroad company would raise eyebrows today.

Escher's Gotthard project would be the most ambitious tunnel of its day. The main 41.4-kilometer tunnel would need 62 sub-tunnels, 34 bridges, and 10 viaducts. It would take 1 million kilograms of dynamite, 1.7 million kilograms of oil, and 10 years (1872-1882) to finish the project.

Early on, Escher realized that Switzerland lacked an indigenous supply of technical talent and engineers to build what he envisioned. He became the political force behind establishing the "Polytechnikum" (1855), now known as ETH Zurich, Switzerland's first federal university. Today, two global rankings name ETH Zurich as one of the world's top 10 universities.

Escher's new value chain creation began with a railroad company and university, then went much further. Funding requirements for railway construction were onerous, and Escher did not want to rely on foreign capital for tactical reasons. It was untenable to the country that its most strategic infrastructure would be owned by



the Germans, French, or Italians. But Switzerland had virtually no commercial banking industry. So, Escher founded his own bank, Schweizerische Kreditanstalt (1856), which today is Credit Suisse, a global player in financial services.

To illustrate the great need for a bank like Credit Suisse then, take a look at its initial public offering. Credit Suisse wanted to raise 3 million Swiss francs by issuing 6,000 shares. The IPO, despite being ridiculed in the Swiss press, was oversubscribed by more than 70x. Credit Suisse ended up distributing more than 442,000 shares worth over 221 million francs — in the 1850s.

Escher didn't stop there. His initiatives separated the new industrial workforce from rural village life where people could depend on family to help in the event of sickness, injury, or death. Switzerland's social security and insurance offerings could not meet demand, so the Swiss looked abroad for insurance products. In response, Escher helped create what is today Switzerland's premier life insurance company, Swiss Life (1857). He then created the precursor to Swiss Re (1863), which today is the world's second largest reinsurance company.

Switzerland is now one of the world's wealthiest countries with a strong middle class, a high standard of living, and an economy that has ranked #1 in the Global Innovation Index for six years straight. Escher was the key architect and entrepreneur behind this success. He epitomizes the Value Chain Entrepreneur who creates a new value chain to solve seemingly intractable problems greater than any one business or industry.

Escher's parallels to Musk, as well as some important differences, deserve some scrutiny.

### **Musk's Value Chain Reinvention**

Escher and Musk inhabit different worlds, but their approaches to solving problems are in sync. Escher recognized that Switzerland would decline without a value-chain reinvention centered on modern infrastructure. His "master plan" to create an industrial economy, which would be daunting to most people, is as follows:

- Start a railroad company
- Plan and start building Europe's most strategic railway tunnel
- Start a world-class university to produce technical talent for the railway
- Create a bank to fund the railroad company, manufacturers and others
- Create an insurance company to protect railway and industrial workers
- Form a reinsurance company to protect the insurance company
- Finish Europe's most strategic railway tunnel to make Switzerland indispensable

Musk, comparably, sees the decline of humanity without a new paradigm for energy production and consumption. In a 2006 blog titled "The Secret Tesla Motors Master Plan," he wrote that "the

overarching purpose of Tesla Motors (and the reason I am funding the company) is to help expedite the move from a mine-and-burn hydrocarbon economy towards a solar electric economy, which I believe to be the primary, but not exclusive, sustainable solution.”

Musk chose a grand problem, not a little business-to-business annoyance. The steps he outlined in the blog to accomplish that goal are similar in ambition and scope to Escher’s plan:

- Build a sports car
- Use that money to build an affordable car
- Use *that* money to build an even more affordable car
- While doing the above, also provide zero-emission electric power generation options

Today, I would argue the master plan looks more like this as it accomplishes its mission to accelerate the world’s transition to sustainable energy:

- Make mainstream electric cars, trucks, etc. (Tesla) and provide convenience platform (super charging stations)
- Create batteries to power those cars and trucks at high performance and low cost (Gigafactory)
- Build solar panels and integrated solar tiles that can charge those batteries as well as

automobiles, homes, businesses, and others.  
(SolarCity)

- Invent mass transit systems and infrastructure that take advantage of sustainable energy (Hyperloop and The Boring Company).
- Create self-driving cars that generate money through ride-sharing so that sustainable transportation is affordable to anyone (Tesla, I predict)
- In case Earth becomes uninhabitable before the energy economy is transformed, colonize Mars (SpaceX).

Musk, like Escher, works on multiple companies at once. Some investors label that as being unfocused or “boiling the ocean.” To Musk, it makes sense to consolidate SolarCity and Tesla, build tunnels under cities, and open source Tesla’s patents to accelerate mainstream adoption of sustainable energy.

In fact, I would argue that Musk wants competitors to make electric cars because it validates his model, builds momentum for infrastructure like charging stations, and ultimately leads to a more efficient and effective value chain. In early July, when Volvo announced that its entire lineup of cars would be hybrid or electric by 2019, that was a win for Tesla. It’s all relative to the Value Chain Entrepreneur’s problem statement.

**“Escher seeded value chains that created new profit pools that benefit Switzerland to this day.”**

Both Escher and Musk created network effects that *appear* to benefit competitors but actually further the value chain reinvention. As I discuss in my last post, [Dawn of the Ultimate Unfair Competitive Advantage](#), this approach creates and therefore disrupts other profit pools. Self-driving cars, for instance, create data and intelligence that redefine how insurers price and package car insurance.

I cannot overstate the importance of these new profit pools. If early-stage investors *only* invested in Value Chain Entrepreneurs, we would quickly be out of work. Too few exist, and rarely do we spot them in their early stages. But creating companies within the new value chain can be as lucrative as creating the value chain itself. Musk and Escher both created voids in which other entrepreneurs could thrive. These startups and incumbents both try to position themselves at a control point in the value chain where they can achieve high profit margins.

Value Chain Entrepreneurs cause whole industries to unravel and rebuild them stronger, the same way a 100-year flood destroys a city but leads to the next-generation of flood control systems. But one challenge Escher faced is also the same for Musk: politics.

### **The Burden of Being Political**

Escher, who had a doctorate, became a politician and businessman to solve national problems. Musk was a physicist who became an entrepreneur and investor and eventually decided to solve an

existential problem. Throughout Escher's life, he used his immense network and political power to achieve business objectives — often by means that would land one in an American jail today. Musk doesn't have Escher's leeway, but he's far from powerless.

Because Value Chain Entrepreneurs focus on macroeconomic problems, they threaten an existing value chain and the powerful entities that depend on it. Electric cars have been possible for a long time, but the automotive and hydrocarbon industries had a vested interest in keeping combustion engines mainstream. The energy value chain is protected by incumbents, politicians, investors, lobbyists, and social contracts because they support profit pools, jobs, elections, political power, and other institutions that create stability, sometimes at the expense of sustainability.

While I'm bullish on Tesla, my 10% doubts stem from the American political system as well as global politics. Musk, to his credit, isn't shying away from the game. SpaceX lobbied the federal government from day one because, as Musk himself admitted to The Huffington Post, "In order to have your voice be heard in Washington, you have to make some little contribution." He tried a stint on President Trump's business advisory council but resigned on June 1 after Trump pulled out of the Paris Agreement on climate change.

What is Musk's next move? Expect to see Musk even more active in local and state politics where leaders treat climate science seriously. For years, he has been fighting to deregulate state dealership laws that prevent Tesla from selling cars directly to consumers, and that battle is not over. Separately, Musk also is urging U.S. governors to regulate artificial intelligence, which he said is "the biggest risk that we face as a civilization."

Musk has had some victories in the political arena. In July, the Boring Company received verbal government approval to build a subterranean Hyperloop that would shorten the commute between Washington D.C. and New York to 29 minutes. With the Gigafactory in 2014 and now a Tesla SUV factory slated for 2019, Musk has been unusually successful at starting bidding wars among state governments, which are eager to stimulate job growth in their jurisdictions.

**“Tesla is not a typical firm, and Musk is not a typical entrepreneur.”**

Most in Silicon Valley have little appetite for politics. Musk, by necessity, is becoming an exception, at least in the realm of public opinion. Can someone like Musk maneuver Washington the way Escher dominated Swiss politics? I’m betting that he can.

### **10x in 10**

All of the reasons I gave support my belief that Tesla is undervalued and has a 90% probability that it will 10x its market cap within 10 years. Musk is a Value Chain Entrepreneur who will reinvent global energy use. He is the modern-day Escher, who created an industrial value chain in 19<sup>th</sup> century Switzerland that elevated the country from a backwater to a global model of development.

Although I assume Tesla will benefit more from value chain reinvention than SpaceX, The Boring Company, or other entities that Musk creates, I could be wrong. In reality, I am betting on Musk. If I

could invest in the man himself, rather than one of his companies, I would do that instead.

A note of caution to would-be Value Chain Entrepreneurs: Escher's life was far from idyllic. At one point, the financial struggles of the Gotthard Tunnel made him such a pariah in Switzerland that he was disinvited from the ceremony celebrating its completion. More than a few times, anonymous detractors sent him silk cords, which were a not-so-subtle invitation to commit suicide. Escher was chronically ill as well and too overburdened to give time to his daughter and wife, who died young. He alienated quite a few people. But more than a century later, the Swiss recognize his achievements.

Future generations need someone like Musk to create a sustainable energy value chain that preserves Earth's habitability. The risks of this value chain reinvention are nothing compared to the consequences of letting the hydrocarbon economy continue as is. Be bold, Elon. Our kids will thank you for it one day.

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