

## Elon Musk on Productivity

Elon Musk is the CEO of Tesla, the car company that has revolutionized the electric car market. He's also the guy who launched his own Tesla convertible into space to promote his space ventures, so he's no stranger to dramatic gestures. At the moment, however, he's got some earthbound problems. Tesla has committed a lot of money to producing its next generation car – the Tesla Model 3 – which is slated to sell for \$35,000, thereby revolutionizing the electric market again. The problem is that Tesla is having trouble reaching its goal of 6,000 units per week at its Fremont plant.

When the Model 3 was first announced, Musk said that the Fremont plant would use radically improved technology to make its production the most efficient in the world. That's a real challenge when you consider that auto manufacturing has long been the test-bed for process work. At the very beginning to the modern process improvement movement, it was Henry Ford who thought up the moving production line and figured out how to control quality and efficiency by carefully defining each employee's tasks. Generations of time and motion experts have worked to refine Ford's initial insights.

As World War II ended, it was the process experts at Toyota, who were inspired by Ford, who developed the Toyota Manufacturing System and who ultimately led to the widespread adoption of Lean concepts in the US. Toyota, in its heyday, was known for its production lines, where a worker, seeing a problem, could hit a button to stop the whole production line. Employee teams at Toyota refined time and motion work and showed how line employees could manage it.

Much of what Toyota learned about working with employees is of only historical interest now, of course, because auto production lines are now among the most highly automated production lines in the world. The videos below picture the installation at the Telsa plant in Fremont California, show one of the most automated production lines in the world. At the same time, Telsa is working to improve its quality standards to exceed what is being achieved at other auto plants.

Manufacturing at the Telsa Fremont plant:

[https://www.youtube.com/watch?v=8\\_lfxPI5ObM](https://www.youtube.com/watch?v=8_lfxPI5ObM)

<https://www.youtube.com/watch?v=TEReFPI4jSc&frags=wn>

It's hard to imagine that Elon Musk had problems finding highly qualified people to help him set up his auto factory. As I noted, auto production, worldwide, is highly automated and the analysis of what goes into the production of a car is very well understood. I assume Musk began by simply hiring top talent from other major automakers. With such talent and able to buy the latest robotic equipment, the overall design of the core processes should have been straight-forward. Similarly, several books have been written on what's involved in hiring and training American workers to function efficiently in such plants – most describing auto manufacturing operations set up in the US by Japanese firms, like Toyota, in the 80s and 90s. Indeed, the factory that Telsa is using in Fremont California was originally built to house a joint auto-building plant created by Toyota and GM. Joint operations were closed there in 2009. Telsa bought the plant in 2010 and equipped it to build their original Telsa cars there.

What Telsa is attempting now, however, is a major effort to scale up production to enable it to produce 500,000 new Model S cars a year. (The Model S is a lower-priced Telsa and its success will depend on being able to produce volume.)

Telsa is currently producing about 5,000 Model s cars a month at the Fremont plant. To produce 500,000 a year, it will need to produce about 42,000 a month. Obviously achieving its goals is not simply a matter of achieving efficiencies on a production line – it's mostly a matter of having enough factory space, enough robots, enough parts flowing in, and enough trained personnel to handle the volume.

In April Elon Musk sent an email to all its auto employees to discuss their goals and to provide some hints for productivity. It's worth examining his suggestions to see where he's having problems and how he hopes to fix them. I've summarized the memo below. (If you want to see the original email with the complete suggestions, read:

<https://electrek.co/2018/04/17/tesla-model-3-production-goal-6000-units-per-week/>

- Avoid large meetings
- Avoid frequent meetings
- Walk out of a meeting or drop a call as soon as its obvious that it isn't adding value
- Don't use acronyms
- Communications should travel the shortest path necessary – not through the “chain of command.” Any manager who attempts to enforce chain of command communications will soon find themselves working elsewhere.
- Repeat: Avoid chain of command – talk direct with the person who can make it happen
- Use common sense. If a “company rule” is obviously ridiculous in a particular situation... the rule should change
- If you see a way to make things execute better or allow you to look forward to coming to work more, send a note to...

To clarify things a bit, let's consider that Telsa has at least four different types of processes it is working on at the moment.

1. Core production processes. (Making cars)
2. Day-to-day management of core production processes (Planning, monitoring, feedback to those making cars, to those in support processes, and to suppliers.)
3. Internal support of core production processes (Hiring, Fixing robots)
4. Managing the increasing productivity of all the other processes (including processes of external suppliers)

The first three processes are processes that every auto company faces. You have to do the work, support the work, and manage (plan, schedule and control) the work on a daily basis.

The fourth set of processes are unique to start-up operations – they involve introducing constant changes to existing processes as they seek to ramp up production and quality. (It is said that Musk is sleeping at the factory so he can stay engaged in what's happening. Ask yourself how many other auto CEOs are sleeping at their plant's tonight to assure that things continue to evolve as desired.)

A glance at Musk's productivity suggestions – which has gotten a lot of comment in the business press – shows that Musk isn't primarily focused on production line work; most of that work is being done by robots. I'm sure there are some people focused on how they might improve the robotic operations, but that's highly specialized. Musk's suggestions are all related to human communication.

His most pressing suggestions are two: don't spend unnecessary time in meetings, and avoid sending communications by way of the chain of command. Let's consider them one at a time.

Telsa is attempting to create a new auto plant, establish operations, coordinate all the various activities, manage inputs from numerous suppliers, and control the quality of the work. I imagine his day is a series of back-to-back meetings and he is focused on eliminating all the wasted time he can. And he clearly would like others to do so too. It's a laudable goal – probably every CEO in the world would agree with him – and if he keeps up the pressure, surely he'll make some progress.

Musk's second main point, that people with problems ought to talk directly to the people who can help them, and not route requests for help up the chain command is an ancient problem. I could find words that are almost the same as Musk's in Geary Rummler's *Improving Productivity* that was published in 1990. Geary, and many others since then, termed it "silo thinking," and complained that it was one of the major problems every company faced.

So, the robot that sets the back right door in place doesn't do it quite right. Could it be changed to... You don't know anyone in robotic programming, so you tell your supervisor, who tells his manager who then speaks to the manager in robotic support. The insight and request for help goes up one chain of command and then back down another – with time and clarity lost along the way. Once again, most executives would like to see this eliminated, or at least reduced, and most know the classic problems that arise when anyone can talk with anyone else. There is some balance to be maintained and Musk's memo doesn't touch on that. Worst case, everyone is talking with everyone else at the Telsa plant and little work and few decisions are being made.

Musk's productivity suggestions make perfect sense, and they are very hard to implement in practice. People hide in meetings, and they avoid responsibilities by passing problems on to their supervisors. It's hard to find employees motivated to take the kind of responsibility that Musk wants them to take. If they were all getting significant salaries and bonuses it would be easier, but Musk also complains of costs and is starting a drive to cut costs.

As I said, there has been some discussion in the popular press about Elon Musk's "radical work ideas." [1] In fact his ideas aren't radical – they are common place recommendations that have been made, over and over again, by those involved in trying to improve business processes. Unfortunately, they involve rather fundamental changes in the way most employees – line workers or managers – behave on the job and it will be hard to implement them on a day-to-day basis. Ultimately, however, that isn't too important, because all of Musk's suggestions, taken together, won't significantly improve Telsa production.

Telsa is currently turning out 5,000 cars a month. Its goal was to turn out over 40,000 per month in 2018. Doubling production would only get Telsa to 10,000 cars per month and that's nowhere near its 2018 goal – and Musk's suggestions aren't the kind of changes that double production. Telsa needs more factory space, more robots, and a whole lot more employees. And it needs to not only increase its own output, but it will need to significantly increase the output of its major suppliers, in sync with its own. Some of this involves putting processes in place. Most of it involves management activities – writing contracts, getting things built and installed, and getting people trained.

Telsa is attempting to do nothing less than revolutionize the auto industry. It's attempting to introduce very good all electric cars. Moreover, it's attempting to do this by creating a new auto company from scratch and then competing with major, established auto companies, who are working to produce their own electronic cars.

Given the costs and the effort involved in creating a new auto manufacturing plant capable to generating 500,000 cars a year to a very high quality standard, one might assume that the odds are heavily stacked against Telsa. GM and Toyota already have plants and large bodies of managers and workers who know how to use those plants to produce high volumes of cars. Obviously GM and Toyota are going to have to retool and even relearn some things to produce high quality electronic cars, but it ought to be far cheaper and faster for them to retool than it will be for Telsa to begin from scratch. On the other hand, as numerous examples have shown, it's hard to convert from one technology to another. People who have done things one way, long enough, make assumptions that are very hard to change. No major horse-drawn buggy manufacturer managed to establish itself as a manufacturer of gasoline-driven cars, even though they had similar advantages.

Stated a different way: can you imagine any conventional auto manufacturer establishing a space rocket capability and then putting the CEO's new sports car into orbit! Telsa faces a major challenge. So far they are behind their targets, but they are being driven by a daring, proven innovator.

Considering things from a business process perspective, I don't see that conventional business process ideas can do much to help them at the moment, their problems are more fundamental. Still, it will be interesting to watch and see just what innovations they come up. The auto industry that has always been close to the heart of leading process innovators – maybe Musk and Telsa will teach us some new lessons.

#### Note

[1] <http://www.bbc.com/capital/story/20180504-do-elon-musks-radical-work-ideas-add-up>

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