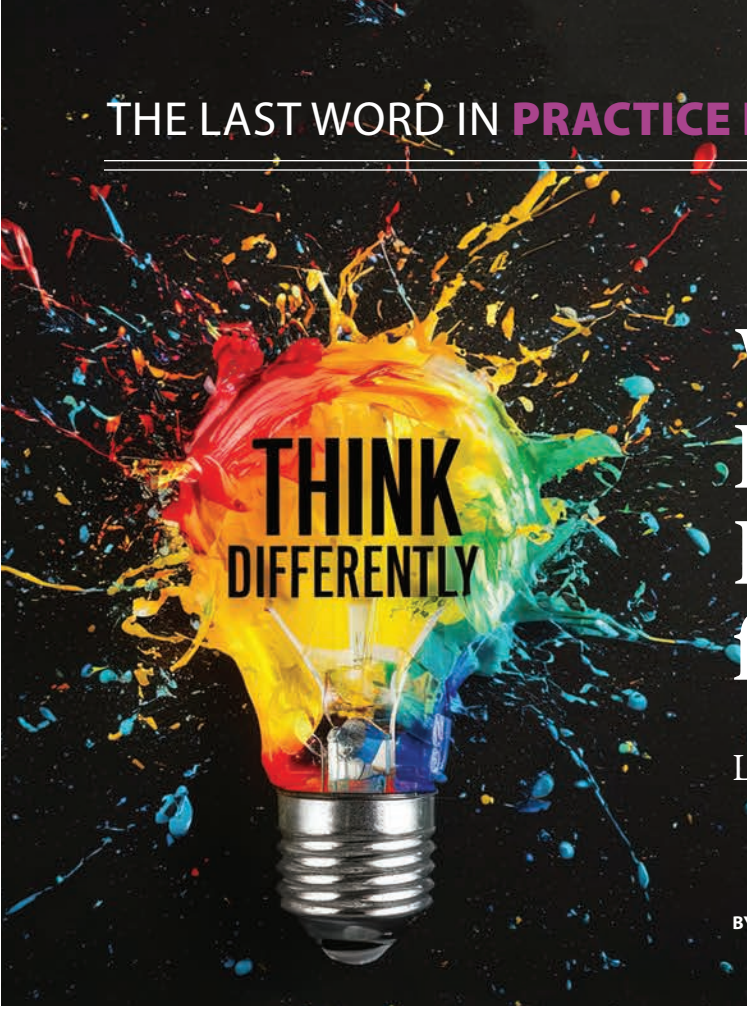

What We Can Learn About Innovation from Elon Musk

Learn to think out of the box.

BY JON A. HULTMAN, DPM, MBA

The standard approach that most people use for solving problems—even major ones—is to start with what already exists and search for ways of incrementally improving upon that. Unfortunately, the type of creativity and innovation required to make major improvements is rarely achieved using this technique. Had this approach worked in the past, the cost and quality problems that plague the healthcare industry would have been solved long ago. As an example of simply improving upon the old, we can look at a challenge once faced by the airlines—"speeding up" air travel. If the industry had begun with its existing propeller engines and incrementally improved upon them, they would have achieved little in the way of increased speed. We would never have arrived at jet engines by incrementally improving propeller powered planes. Changes this momentous always require re-starting and coming up with an entirely different concept—in this case, jet propulsion.

Most of the major challenges that doctors face today in private practice also require a new way of thinking—one that incorporates this type of re-starting from the beginning. This happens to be the foundation of Elon Musk's multiple innovative successes.

Musk is a person who thinks differently from many. By age 46, he had innovated and built three multi-billion dollar companies competing in completely different fields—PayPal (Financial Services), Tesla (Automotive and Energy Storage), and SpaceX (Aerospace). When faced with seemingly impossible challenges, his approach has been to draw on an ancient philosophy called "first principles."To Musk, this means "boiling things down to the most fundamental truths and then reasoning up from there." When he began working with Tesla, he felt that the initial challenge was to create a longer range, less expensive battery. Conventional wisdom accepted the "reality" that battery packs were going to stay very expensive—costing $600 per kilowatt hour.

Rather than starting from what already existed and trying to improve upon that, Musk employed his philosophy based on first principles. He had Tesla re-think batteries from scratch. The company first broke down the battery into its material components—cobalt, nickel, aluminum, carbon, some polymers for separation, and a seal can and found that these products could be bought on the London Metal Exchange for an expense equivalent to $80 per kilowatt hour. From this starting point, they developed a novel and less expensive way to build Tesla's battery packs. According to Musk, "Once you've identified and broken down your problems or as-

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Elon Musk (from page 145)

sumptions into their most basic truths, you can begin to create new, insightful solutions from scratch."

Two of our biggest challenges in the delivery of today's healthcare continue to be timely access to care and the long waits that patients face upon arrival. These issues are interrelated, and practices attempting to improve upon them typically begin with the delivery processes they already have in place.From there, they make incremental improvements. If we, instead, take Elon Musk's approach and break our processes down to their most "basic truths," we are led to consider the laws of physics related to "flow". If you have ever wondered how you can utilize those physics classes required to get into medical school, this is it.

The workflows of a medical practice include those of information, intra-office communication, and patient movement. For the typical patient's visit, this flow begins with his/her initial call to schedule an appointment. It then moves through numerous, complex tasks in geographic areas both internal and external to the office, and the end-point is reached when the practice receives payment for the care rendered. The basic principles of physics governing each step along the way include waste (these are unnecessary activities that have no impact on the final outcome), variation (the time required for each step in a process can vary widely), and choke points (these are those points at which the flow from multiple processes converge, and work backs up).

Solutions must be directed at (1) eliminating unnecessary tasks, (2) reducing the amount of each task's variation, and (3) finding innovative ways to work in parallel at choke points to prevent work from backing up. Innovative solutions will be found if, starting from scratch, each process is re-thought with these basic goals in mind. What is critical to the innovative thinking process is recognition that any suggested "solutions" which do not address at least one or more of these three basic "truths" of flow will add cost with no corresponding benefit.

What motivated me to rethink these access and wait time processes was a Sacramento Bee headline which read: "With Dems' Help, DMV Dodges Audit of Wait Times." The words "dodges audit" implied that conducting an audit as the starting point for addressing a major problem in the DMV workflow would have been a bad thing and that our legislators had stepped in and "saved the day." This made absolutely no sense to me because when trying to fix a problem with access and wait times, an audit is the place to start.

An audit helps us to quantify a problem, identify areas in workflow where backups occur, and then enable managers to break the problem down to basic truths. Following an audit which is capable of identifying the actual source of an issue, innovative solutions that address the underlying causes of that issue can be found. Recent wait times at the DMV have extended to hours, even for customers who have appointments. The default option that most managers in such a situation employ (including doctors) is simply to add more people and tasks to an already overburdened process. It is clear that the DMV is not going to solve this problem anytime soon simply by throwing more people and money at their existing processes in an attempt to improve them incrementally. I can only imagine what Elon Musk's reaction would have been had he read this newspaper headline.

You may recall that in the recent past, there were numerous articles focused on the bad quality at VA Hospitals. It was ultimately determined that the VA's primary problem was not the quality of the medical care being rendered. Rather, it was the number of months required for VA patients to obtain appointments along with the number of hours veterans waited to be seen once they arrived for those appointments. Timely access to care is a major issue for all medical practices. Whether you are a solo practitioner or practice in a large group, "first principles" is the place to start when attempting to improve your access and wait times.

Because medicine, similar to the DMV, has changed greatly in volume and complexity over the past decade, the business processes of most practices are in need of this type of redesigning from scratch. To do so, one must start with their most basic truths—utilizing the laws of physics—to build new and more effective processes. Tesla's current focus as a public company is to show a profit; however, prior to focusing on profit, they had to first prove their concept and build an infrastructure capable of increasing the range of electric vehicles. As the company focuses on profitability, where would you guess Elon Musk and the employees at Tesla might pivot in order to solve this challenge? One last piece of advice from Elon Musk: "It is important to view knowledge as sort of a semantic tree—make sure you understand the fundamental principles, i.e., the trunk and big branches, before you get into the leaves or there is nothing for them to hang on to." **PM**

"It is important to view knowledge as sort of a semantic tree—make sure you understand the fundamental principles, i.e., the trunk and big branches, before you get into the leaves or there is nothing for them to hang on to."—Elon Musk

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