

ATDynamics

Rolling into its 6th year...

by John Grossmann D'73

Andrew Smith T'07, Founder and CEO



Hello DEN Community,

I'm John Grossmann D'73 and I'm writing to save you the temptation of Googling the word TrailerTail® while you're driving. There are now more than 12,000 of these eye-catching extensions attached to the rear of highway-traveling big rigs, so if you haven't seen one already, you're bound to soon. When you do, you'll have caught a glimpse of a green innovation with a Big Green cast to it.

The fuel-saving device is the creation of a Dartmouth-born company called ATDynamics Inc., a seven-year-old, 50-employee company based in Hayward, California, that was founded by Andrew Smith T'07. Smith began the company while at Tuck. There, he benefitted from engineering input from Thayer students, including that of Jeff Grossmann D'06 TH'07, the company's first employee, currently vp of engineering--and, disclosure time, my son.

Truth is, I would have been interested in ATDynamics (www.atdynamics.com) even without the family tie, or the additional flashes of Dartmouth Green in the company ranks. (Chuck Horrell D'00, TH'01 was the company's first engineering manager; Devin Lammers D'07, who joined the company in the fall of 2010, is director of operations. Plus, over the years, Smith has brought on a handful of Dartmouth interns.) This is precisely the kind of startup I like to write about for *The New York Times* and *Inc.*: an entrepreneurial small company that shrewdly partnered with some of the early inventors of rear drag aerodynamics and then built on their work to come up with a patent-protected product. A small company bent on big things, like trying to move a battleship of an industry and in so doing

save its constituent companies significant dollars while also saving America millions of gallons of diesel fuel annually.

As Smith's Tuck-polished business plan first noted, the nation's trucking industry has some two million big rigs rolling down US highways, virtually all of them unaerodynamically shaped and therefore fuel-*inefficient*, big rectangular boxes. ATDynamics says trucking companies and independent truckers can repay the cost (roughly \$2,000) of the TrailerTail® in as little as one year. "Each aerodynamic tail retrofit offsets equivalent fuel savings of replacing a car with a standard combustion engine with an electric vehicle," the company claims, "at 1/15th the cost."

When deployed, the rear-panels extend four feet from the rear of the trailer, streamlining the airflow and increasing fuel efficiency by about six percent. Since America's trucks account for about 15 percent of the nation's fuel consumption, the potential energy savings loom large indeed. In addition, the TrailerTail® offers ancillary safety benefits. By reducing spray off the back of the truck in wet weather, it improves visibility for the trucker and those immediately behind. Moreover, truckers have reported that in high winds the device improves stability, making the rig less prone to accidents.



MORE FREIGHT, LESS FUEL

ATDynamics, Inc. and its fleet customers have redefined the shape of the world's most fuel efficient tractor-trailers.

From my son Jeff I knew a bit of the company's early days and back-story. But after finally seeing my first TrailerTail® on the highway, near the Mid-Atlantic trucking crossroads of Carlisle, Pennsylvania, I was prompted to learn more and put a few questions to company founder and CEO Smith.

Q: What were some of the advantages and disadvantages of starting a company while getting your MBA at Tuck?

A: Let me start with the advantages. Throughout the two-year program the business management courses you're taking are immediately relevant. You're able to ask all of the questions any entrepreneur should ask when evaluating and planning a business, because your network is at your fingertips. Literally every day you're exposed to dozens of people who can provide input: professors, fellow students, the alumni network, and visiting speakers. And there are office hours where you are able to speak with investors and visiting companies.

Q: How valuable was all this?

A: Extremely valuable. It meant that by the time I graduated from Tuck, I'd pitched the business dozens of times. We'd already won first place in the Rice University Business Plan competition and second place in the Global Social Venture Competition. I had had an engineering team from Thayer working on initial prototypes. Also by the end of business school, I'd had a team of business school students from my class, as well as a team of business students from the following year, working on the project—a semester of consulting on different aspects of the business by a dozen students.

In terms of the disadvantages, my warning to entrepreneurs going to business school is you really want to be committed to entrepreneurship early, because the opportunity cost of starting a business is extremely high. Never in your life will you have so many recruiters and so many high paying opportunities in front of you—to go into finance or consulting or a managing role in a big established corporation—and you're choosing to eat peanut butter and work out of your house. You'll make some short-term sacrifices.

Q: I know ATDynamics is a very much a bootstrapped enterprise. Explain the importance of business competitions and grant money to the success of your startup?

A: One of best things that happened to our company early on, is we didn't take on a huge amount of capital. We had a bit of luck with a business plan competition and meeting some strong angel investors and winning some grant money. That forced us to run the business in a very cost effective manner, which meant that even when things took longer than we thought, we were not burning a lot of cash and were able to build the company the right way, rather than trying to build too fast before the product was ready.

Q: You did talk to venture capitalists, though?

A: We did. We spoke with a lot of different funding opportunities. The company ended up being funded by two principal groups. One was Angeli parvi, which

stands for Little angels, out of Thayer, which is the angel investment group. Angeli parvi participated in the Series A investment round in the company. We also got angel money from the Goose Society of Texas. We met them through the Rice Business Plan competition. We'd won a \$100,000 investment prize that was sponsored by this Goose group and since then, the Goose group has been a key supporter of the company.

Q: So it served you well to not have to rely on venture capital funding?

A: Yes, because of the support of our angels, the majority of which have built companies themselves, our financing partners were willing to let the company grow in time with the market, as opposed to trying to move too fast. We ended up going through 15 different iterations of the product. If we'd had a ton of money and tried to sell and market the wrong product too early, we would have spent a lot of money and really hurt the company. The trucking industry is resistant to new technologies because it requires such a high durability product. So being able to introduce the TrailerTail® and work with some key trucking fleets over the first few years, rather than pushing too hard, allowed us to get the right product into the market.

Q: Initially, the company set up shop in a rented house in Norwich, Vermont, but you soon relocated to California. Why? What advice can you give entrepreneurs about deciding where to put down corporate roots?

A: The reason the company relocated to California after Dartmouth was because Silicon Valley had a strong focus on clean tech innovation and entrepreneurship. It's a region with a mindset of innovation, so you can talk to lots of people going through the same experience, even if it might be in different industries.

Q: Did lifestyle reasons also factor into the choice?

A: I think anybody who thrives in the Dartmouth environment tends to be outdoor-oriented, so it's pretty typical in our company that folks spend their weekends climbing in Yosemite or skiing at Lake Tahoe. We have a work hard, play hard culture.

Q: But settling in northern California you're not, however, close to very many of your trucking company customers? Has that been a bit of a trade off?

A: Exactly. Because we decided to be in this area, we've had to build up additional presence in the Midwest, Southeast, and Southwest, adding regional sales managers where the large trucking fleets are. My recommendation: being closer to customers is also helpful.

Q: So, 15 iterations of the TrailerTail® design--from the first origami-folding plywood panels attached to a borrowed trailer that sat in a Thayer parking lot long after you and Jeff graduated in '07. When did you decide it was finally time to stop testing prototypes and pull the trigger on production?

A: Initially, it didn't seem that difficult to put the device on the back of a trailer, but it turned out it's a non-trivial mechanical engineering challenge to have a four-foot extension collapse effortlessly flat against the rear doors of the trailer and endure hundreds of thousands of miles of on-road abuse in all weather conditions. It took that many iterations to go from a concept to a really easy-to-use, simple product. My advice to entrepreneurs is do not wait to sell your product. We actually sold all 15 versions of that product to customers and had them use them in on-road operations. So it was never a question of us waiting to start selling. We started selling from day one. So when the product was finally ready, selling didn't require as much effort. My recommendation is: sell your product early and often and the market will finally tell you what works.

Q: You've compared the adoption cycle of the TrailerTail® to that of vertical winglets on commercial airplanes. Explain.

A: The reason we started the company is there's a \$3 billion a year fuel savings in North America alone by fixing the way air flows around the back of a semi trailer. What's needed then, is a product that's durable enough to satisfy the needs of the industry and the early adopters to prove to the industry that it works. In the winglet industry, aerodynamicists knew that if you modified the tips of airplane wings you could significantly reduce drag and save five to ten percent of the fuel at cruising speed. Likewise, NASA aerodynamicists knew back in the '70s that if you modified the back of a semi-trailer you could save five to six percent of the fuel. With winglets, lots of people knew about it, but airplane wings were always flat and it took Southwest Airlines to be the first company to adopt it on all their airplanes, and since then, every airline in the industry has adopted winglets.

Q: So who was your Southwest?

A: By 2010, lots of people knew that our TrailerTail® technology worked, but it took Mesilla Valley Transportation out of Las Cruces, New Mexico, adopting it, just like Southwest Airlines, and now it's becoming a new standard in the industry. Like Southwest Airlines, they are visionaries in the industry and don't wait for other people. They've now ordered more than 4,000 TrailerTails®, enough for their entire fleet. In all, there are currently more than 12,000 TrailerTails® on the road. Last quarter we produced and shipped more units than in all of 2010.

Q: Sounds like ATDynamics has itself cut drag and is really sailing along.

A: Most fun, is that after many years of doing the startup thing, eating peanut butter, revising prototypes, we have accomplished the original vision that we laid out in our business plan competitions, and that is, creating a new normal. We want it to be strange, if three to five years from now, if someone sees a trailer going down the highway at 60 miles an hour, *without* a tail on it.

One of the most exciting things that's recently happened is that governments in the European Union, Australia, Mexico, and Canada are all working to update regulations by providing extra length exemptions, to allow for aerodynamic devices based on the success of TrailerTails® by ATDynamics. There are about four million trailers worldwide. The possibility exists to save about \$50 billion in fuel over the next decade if we were to get these trailers retrofitted as quickly as possible. And it all started with a plywood prototype on an old trailer behind Thayer Engineering School.

About John Grossmann D'73

Grossmann is a longtime freelance contributor on subjects as varied as implied by the list of publications he's written for: *The Art of Eating*, *Audubon*, *Cigar Aficionado*, *Esquire*, *Golf*, *Gourmet*, *Health, Inc.*, *Men's Journal*, *National Parks*, *The New York Times*, *Plate*, *Psychology Today*, *Saveur*, *Smithsonian*, *Sports Illustrated*, and *Yoga Journal*. He co-wrote, with Emmy-winning acoustic ecologist Gordon Hempton, *One Square Inch of Silence*, a book about preserving America's few remaining naturally quiet locations. Current assignments include a story on commercial fishermen in his home state of New Jersey, a Sonoma County dry farmer of potatoes, and several small businesses wrestling with various crucial decisions. He has no idea what he'll be working on three months from now. He's comfortable with that and enjoys the freedom to follow a compelling story that catches his fancy.

Grossmann received his AB in English from Dartmouth in 1973 and obtained his MSJ from Northwestern University in 1975.