BACON'S REBELLION
The Op/Ed Page for Virginia's New Economy

The Innovation Gap

There are compelling reasons for people to ditch their cars and use mass transit. Unfortunately, auto companies are reinventing themselves while the transit sector stands still.

By James A. Bacon

Between the cost of purchasing an automobile, fueling it, repairing it and paying insurance on it, car ownership is getting very expensive: Since 1999, the IRS standard mileage deduction has increased from 31 cents to 50.5 cents -- an increase of roughly 60 percent. Meanwhile, roads are getting more crowded and travel delays worse. Nationally, congestion costs per peak traveler have jumped from $533 in 2000 to $796 in 2005. Moreover, cars remain deadly: In 2006, more than 42,000 Americans died in traffic accidents.

Those are just the problems that we can readily measure. Cars also contribute to pollution through tailpipe emissions, dump greenhouse gases into the atmosphere, and prop up the price of petroleum, which subsidizes hostile regimes and complicates United States foreign policy.

Surely, one would think, Americans should be abandoning their automobiles in droves and seeking transportation alternatives. But we're not. We persist in our devotion to automobiles. Indeed, with each passing decade, more Americans drive solo to work and fewer carpool. Despite billions of dollars of government subsidies, mass transit can't gain significant market share. Why, despite their massive drawbacks, do automobiles remain the dominant transportation mode?

There are several reasons(1), but to my mind one stands out: the vast disparity in innovation between the automobile industry and the mass transit industry. Automobile manufacturers continually improve their products in the quest to meet the needs of their customers. For the most part, the mass transit sector does not. If we fail to address this innovation gap, there is little chance that we can budge people out of their cars in large enough numbers to matter.

I had a chance to view the innovation gap up close Friday when Bud Buczkowski, director of electrical systems engineering for Ford Motor Company, addressed the Greater Richmond Technology Council. The auto executive outlined how the venerable old auto company -- this year marks the 100th anniversary of the introduction of the Model T -- continues to reinvent itself.

Perhaps you saw the ad for Sync, Ford's new voice-activated control for music and cell phones, during the Super Bowl. Ford put the Sync technology on display in Richmond, parking a SUV and a smaller car outside the GRTC event. People climbed into the front seats, issued orders to the music players, and made calls without taking their cell phones out of their pockets.

The beauty of Sync, Buczkowski explained, is that it allows "hands-free, eyes-on-the-road" driving. No more fumbling in your pockets for ringing cell phones. No more thumb-punching phone numbers into your wireless device. No more leaning over and fiddling the MP3 player controls to change a tune.

Cynics could argue, quite correctly, that this super-cool technology does no more than solve a problem that only automobiles create -- the temptation to multitask while driving. "Hands-free, eyes-on-the-road" technology is not a necessity for riding the bus. But that would be missing the larger point. Sync is just the beginning. It's the first ripple in a tidal wave of innovation that will change the way people interact with their automobiles.

Younger Americans, observed Buczkowski, are attached to their personal devices -- laptops, cell phones, BlackBerries, MP3 players and more. "People have a lot of stuff, and they like to take it with them," he said. "The new generation of car buyers is used to being connected." Ford wants to help people stay connected. The company's goal, he explained, is to make cars "our second home on wheels."

Think of all the products that either have been introduced in the past few years, or soon will be. Wireless emergency-911 assistance is fast becoming ubiquitous. Real-time traffic data is becoming increasingly available. (Virginia is part of a consortium that will aggregate data from 750,000 road sensors and GPS-equipped vehicles to track

real-time traffic flow in the Interstate 95 corridor.) More and more cars come equipped with video display monitors and GPS navigation systems. It won't be long before car owners will be spitting out "vehicle health reports" that tap into a dozen different monitoring systems in their automobiles.

Digital technologies normally associated with PCs and consumer electronics are enabling a wide array of new capabilities. Michigan residents are obsessed with snow storms, Buczkowski noted. Want a weather report? Watch a Doppler radar display on your car monitor. Worried about traffic accidents tying the Interstate in knots? Incident reports can pop up on your monitor and provide the fastest-moving alternate route. Running low on fuel? Download the locations of the nearest gas stations -- along with the price they charge for gasoline.

And those are just the things that Buczkowski is willing to talk about. There are other projects, he said, that he won't disclose for competitive reasons. He did acknowledge in response to a question that one amazing scenario -- automated driving... cars that drive themselves, like the ones portrayed in the movie, "I Robot" -- actually could move from science fiction into everyday reality.

The challenge facing Ford, Buczkowski said, is meshing the high-speed innovation cycle of consumer electronics with the slower innovation cycle of the automobile industry. How can the auto industry, which can take two years or more to roll out a new model, introduce new electronic products for its cars? Ford's solution, he said, is to envision the automobile as a software platform similar to a personal computer. Just as you can update the applications on your PC, so can you upgrade the software applications on your automobile. If you want a new feature on your car, you don't have to wait for a new model to come out. Just wheel your car into the dealership and have a technician download the software.

The rate of innovation could well accelerate. Currently, Ford is working in partnership with giant companies like Microsoft and Sony. Buczkowski looks forward to the day when the automaker can engage the services of third-party software writers. There's no telling what ideas they might come up with. As a member of the GRTC audience marveled, "Remember the days when you'd retrofit cars with new hub caps? Now you'll retrofit them with new software."

Needless to say, Ford is not the only auto company thinking in these terms. Toyota, General Motors, Mercedes and all the others are racing to harness the power of on-board computers, video displays, GPS technology and other digital technologies to the automobile. One innovation will tumble after another as the players in this globally competitive industry seek to gain a fleeting advantage over the others.

Now, compare the pace of innovation in the auto industry with the rate of change in other transportation modes. Other than the advertisements spray painted on the sides, how different are the transit buses of 2007 from those of 1967? Functionally, have they improved at all? I'm not a big bus rider, but I don't see much difference.

I can't discern much sign of innovation in the mass transit sector, and for several reasons I expect to see little in the future. For one, bus and heavy rail operators don't conduct any R&D themselves. They rely exclusively upon outside companies to introduce new ideas. Thanks to those outside suppliers, some new technology does leak into the marketplace: For instance, GPS transponders can provide the exact location of buses and keep passengers at bus stops informed about when the bus will arrive. Another advance: Signaling technologies can regulate the sequencing of stoplights so that buses can move in expedited fashion along its route.

But how widely and aggressively has anyone moved to embrace these new tools? The rate of innovation, from my vantage point, appears to be much slower than in the auto industry. Government transit operations simply are not geared to handle change. As monopolies, they are more focused on internal constituencies and less on their customers. Dependent upon subsidies for operational improvements and capital investments, they are subject to the whims and vagaries of politicians. Even the most dynamic transit leaders often find themselves hamstrung in their efforts to implement change.

Take the Washington Metropolitan Transit Authority, which operates Washington-area buses and heavy rail, as an example. The quasi-governmental authority is an operational disaster, plagued by poor service and periodic disruptions by transit unions. Its governing board must balance the political interests of two states, the District of Columbia and a multitude of municipalities. Worst of all, the authority is dependent upon contributions from numerous state and local authorities for operational funding and capital investment. That dependency, aggravated by endemic inefficiencies,

manifests itself in billions of dollars in deferred maintenance. MWATA lacks the financial wherewithal to maintain current levels of service much less to upgrade its system with expensive new technologies -- regardless of how much they might improve productivity or build ridership over the long run.

Other municipal transit operations suffer from many of the same problems, just on a smaller scale. Governance structures delay decision making, financial inflexibility inhibits investment in innovation, and insulation from competitive forces creates organizational cultures with little motivation to change.

It remains an utter mystery to me why buses and rail cars don't all come equipped with Internet connectivity and electric sockets to plug in laptops. Think what a competitive advantage mass transit would enjoy if people could work on the way to work!

But we don't see these things, or any prospect of them. If innovation in consumer electronics is in the fast lane and innovation in the automobile sector is in the slow lane, innovation in mass transit is creeping along the shoulder of the highway with a blown out tire.

The innovation gap does not change the fact that gas prices are destined to increase, that road congestion will only get worse, or that another 1,000 Virginians will die this year in traffic accidents -- a number that, had it been Virginians who'd died in Iraq, would have sparked a political upheaval. The gap does not change the fact that autocentric human settlement patterns dedicate massive amounts of acreage for roads, driveways and parking spaces, and burden state and municipal governments with massive infrastructure obligations. The innovation gap does not change the fact that our autocentric society is financially unaffordable and environmentally unsustainable.

Even so, the gap persists. People will not abandon their cars for buses, light rail and subway lines in meaningful numbers until the mass transit sector can create a culture of innovation. Unavoidably, creating a culture of innovation will require transforming mass transit companies from monopolies into competitive enterprises, from wards of the state into businesses that can raise capital in public markets, from internal-focused entities into market-driven dynamos.

Restructuring the ownership and organization of mass transit will not, by itself, make the sector competitive with automobiles. Another precondition is instituting sweeping changes to human settlement patterns. But painful restructuring -- root-canal painful -- is a necessity. Until we take the boots off the industry's wheels, the locks off its steering column and the kill switches off its ignitions, mass transit will never get moving.

-- February 11, 2008

End Notes

(1). See E M Risse's essay in the current edition of the *Bacon's Rebellion* e-zine, "What Is the Problem with Cars?" for a detailed treatment of this topic. Risse explores three major reasons why cars remain the dominant transportation mode in the United States. First, human settlement patterns have become increasingly scattered, disconnected and low density, rendering it impossible to provide mobility through any mode but the automobile (or, as he calls them, autonomobiles). Second, the automobile industry and allied industries promote cars and automobility through massive advertising and manipulation of public opinion. Third, mainstream media, which are dependent upon automobility-related advertising, have failed utterly to exercise a countervailing influence.

This column does not take issue with Risse, but rather expands upon his argument. A fourth crucial reason why automobility remains dominant is the structure of the automobile and mass transit industries. The auto industry is highly competitive and continually introduces innovations into the marketplace; the mass transit industry, dominated by government-owned or quasi-governmental monopolies, stifles innovation.

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