





Driving Questions: Developing a National Transportation Strategy

By Joseph M. Giglio, Ph.D.

Editor's Note: The following article is adapted from the author's most recent book, Driving Questions: Developing a National Transportation Vision, published in April 2007 by the Hudson Institute.

First, a confession. The book on which this article is based isn't a product of the usual magisterial isolation in an academic setting where time beats to its own stately metronome. Instead, it grew out of real-world testimony about improving transportation that I presented before the National Surface Transportation Policy and Revenue Study Commission in Dallas on September 20, 2006.

The testimony's purpose was to set forth a framework for defining certain strategic questions about transportation in the United States. It seemed to me we had to address these questions before we got caught up in the next round of debate about such tactical issues as appropriate levels of funding, how to restore the rapidly diminishing balances of the Highway Trust Fund, and new ways of paying for transportation improvements.



My book tries to flesh out the important points in the testimony, respond to questions it generated among Commission members and others, and clarify the three strategic questions that formed its core:

1. What should the nation's transportation system look like in the future?
2. What options do we have for transforming the existing system to match this vision?
3. What resources are available to carry out these options?

These are strategic questions because their answers will determine the shape of any tactical programs we develop to improve the nation's transportation system. And they still remain unanswered, mainly because we have yet to ask them in a properly serious way.

"Strategy" is a million-dollar word with multiple meanings that can lead to all kinds of confusion. There seems to be at least lip-service agreement that a superior strategy is behind every

successful enterprise, so it's something we have to take seriously. But beyond this, most discussions of strategy seem to degenerate into vagueness and irrelevancies.

Is strategy some MBA-type's interpretation of elaborate Excel spreadsheets full of numbers that claim to define the shape of an enterprise's future? Is it a carbon copy of something that hindsight shows worked well for another enterprise at another point in time? Is it the off-the-cuff play-calling of a CEO whose gut instincts (or maybe just pure luck) have made him a Wall Street favorite? Is it solely the product of academic, stained-glass rational thought uncontaminated by the hurly-burly of the real world? Is it kitchen-sink experimentation? Is it a finished painting to be worshipped at arm's length? Is it something we fall back on when all else fails?

Those of us who read books on "business strategy" often come away with the uneasy sense that each author has defined the term in self-serving ways to support whatever particular management shtick he happens to be promoting. In this context, "strategy" may seem like nothing more than an impressive label pasted on an author's pet idea to boost sales of his book.

Fortunately, strategy is far more than a simple-minded buzzword. It has an impressive intellectual pedigree that's many centuries old.

Originally, it was developed in the military arena to answer the question, “How do we use armies to further a nation’s interests?” But as civilization matured and other kinds of large enterprises came to play important roles in developing societies, strategy moved beyond the purely military arena.

The Roman Catholic Church, the East India Company during the early period of third-world colonizing by European nations, the railroads and other industrial corporations spawned by the Industrial Revolution—all adopted the military discipline of strategy in one form or another to help themselves develop sensible road maps to guide their activities in the direction of increasing growth and power. In the process, it became apparent that effective strategy had to embody an ongoing process for adapting to rapidly changing environments. How else could the Roman Catholic Church have become the world’s largest, richest, and most influential religious enterprise?

In some cases, an awareness of strategic potential has even given birth to large enterprises that didn’t previously exist. This happened during the 1930s, when a ragtag collection of feuding criminal gangs in major American cities got shaped into a smoothly functioning cartel that became an important national industry known popularly (if inaccurately) as “the Mafia.”

This cartel was largely the inspiration of Manhattan gambler Arnold Rothstein and Chicago gang leader Johnny Torrio. Both were visionary strategic thinkers who lamented the enormous potential profits from bootlegging and other activities they saw being left on the table as individual gangs wasted too much of their energy on pointless blood feuds. In the best tradition of practical capitalism, they became convinced that cooperation would yield more benefits than competition.

So, under the aggressive leadership of such prodigies as Lucky Luciano, Meyer Lansky, Frank Costello, and Longy Zwillman, the traditional gangs were hammered into large groups of cooperative enterprises that proceeded to parcel out business territories. They created a national board of directors and internal enforcement arms such as Murder Incorporated; bought comprehensive protection from local politicians and police departments; expanded their activities into a wider variety of illegal and quasilegal activities; and became hugely profitable as a result.

War Plan Orange

One of history’s most successful examples of real-world strategy in action is the U.S. Navy’s War Plan Orange. This was a detailed game plan for defeating Japan in the event that its geopolitical rivalry with the U.S. after 1900 should lead to war.

During the 40 years prior to World War II, the specifics of War Plan Orange went through more than two dozen revisions in order to remain on top of such realities as evolving naval technology, the ebb and flow of diplomatic relations between the two nations, internal power struggles in Japan for control of its government, changing ideas within the U.S. government about offensive versus defensive stances with respect to Japan, and the role of the U.S. in conflicts among its major European trading partners.

But throughout, War Plan Orange's underlying vision remained intact:

- War would begin with a surprise attack by Japan, probably against the U.S. colonies of the Philippines or Guam in the Western Pacific, acquired as a result of the Spanish-American War.
- Japan would promptly invade the Philippines. The U.S. Army garrison there (which couldn't be reinforced) would fight a delaying action to buy as much time as possible for the U.S. Navy to get its act together for a counteroffensive, and to deny the use of Manila Bay as a base for the Imperial Japanese Navy.
- The U.S. Navy would steam across the Central Pacific (establishing temporary supply bases on various convenient islands along the way) to seek out and destroy the Imperial

Japanese Navy in one or more climactic sea battles in the waters between the Philippines and Japan.

- With its navy destroyed, import-dependent Japan would be subject to a total blockade and siege by the U.S. fleet that would cripple its ability to carry on the war. Thus, its government would enter into peace negotiations. The result would be Japan's acceptance of U.S. dominance in the Pacific Rim.

Those of you familiar with the history of World War II in the Pacific know this is pretty much what happened. But like all good strategies, War Plan Orange was able to be modified along the way to respond to unanticipated events. For example:

- Japan's surprise attack on December 7, 1941, actually came against Pearl Harbor (though it was followed up within 12 hours by attacks on the Philippines, Guam, and Wake Island). The Pearl Harbor attack crippled the battleships that the U.S. Navy had always regarded as its primary offensive force. So under the clear-eyed leadership of Pacific Fleet commander Admiral Chester W. Nimitz, the Navy turned to task forces built around its aircraft carriers. As it turned out, the aircraft carrier became the primary naval offensive weapon in the Pacific War in the hands of gifted sea admirals like Ray Spruance and Bill Halsey,

even after the battleships crippled at Pearl Harbor were replaced by brand new battleships (especially the superlative Iowa class) that could run rings around anything in the Imperial Japanese Navy.

- For political reasons, President Franklin Roosevelt had to establish a Southwestern Pacific command for General Douglas MacArthur (who had botched the defense of the Philippines and was evacuated to Australia). This had nothing to do with War Plan Orange and was entirely superfluous. But MacArthur was a particular favorite of Republicans in the U.S. Congress, and Roosevelt needed their cooperation in order to pursue his larger agenda of “Beat Germany First” in partnership with the United Kingdom and the Soviet Union. Fortunately, Roosevelt’s success in turning the U.S. economy into a hugely productive “Arsenal of Democracy” after his 1940 reelection meant that War Plan Orange’s Central Pacific emphasis was never compromised by any shortages of fighting men or equipment.
- Even after the U.S. Navy destroyed the Imperial Japanese Navy in two sea warfare Super Bowls (the Battle of the Philippine Sea in June 1944 and the Battle of Leyte Gulf in October 1944), Japan’s government showed no willingness to enter

peace negotiations. It was controlled by army generals whose samurai culture (like Hitler’s mad passion for a Wagnerian *Gotterdammerung*) dictated national suicide in the name of the emperor as a better alternative than the humiliation of a Western-style negotiated peace.

- During 1945, War Plan Orange had to be amended to pursue a four-pronged end game. This included the originally planned sea blockade; a massive aerial bombing campaign that culminated in the August atomic-bomb raids against Hiroshima and Nagasaki; preparations for a land invasion that would have wiped out a significant proportion of Japan’s population; and Joseph Stalin’s promise to turn the frightening power of the Red Army loose against Japan. Japan’s emperor finally wised up to the fact that his own quasi-sacred position as head of state was in danger of being swept away as Japan moved ever closer to a German-style national collapse. He directed the government to seek peace, which came on August 15, 1945.

War Plan Orange guided the U.S. to victory over Japan in barely three years and eight months after the Pearl Harbor attack. This was far less time than the U.S. spent in Vietnam (not to mention the current Iraq conflict). It was obviously a sound strategy to begin with. Equally important, it was flexible enough to roll with the punches from

At the moment, we probably have the surface transportation network we deserve. Especially in view of our decades-long unwillingness to maintain it adequately and invest in it properly.

unexpected events that planners weren't able to anticipate, making it a textbook example of strategic planning at its best.

War Plan Orange illustrates why a study of military history provides essential background for all those attempting to develop effective strategies for transportation systems and other large enterprises. Without this background, they would be like technowannabes trying to do engineering without ever having studied physics.

Meanwhile, let's be clear and stipulate without hesitation that having a strategy means knowing what we're trying to accomplish, how we can accomplish it, and what resources we need to accomplish it.

Putting the Horse before the Cart

At the moment, we probably have the surface transportation network we deserve. Especially in view of our decades-long unwillingness to maintain it adequately and invest in it properly. But there's a nagging sense that we don't have the transportation network we really need to support a decent level of economic growth. This means that any tactical transportation improvement programs we may have (either in practice or on shelves full

of elaborate studies) lack essential soundness. Therefore, whatever funding gaps and other shortcomings we think exist for carrying out these tactical programs are speculative at best. How could they be otherwise when we haven't yet developed a sound strategy for turning the present transportation system into what the nation needs? So we have to stop trying to put the cart before the horse and start over.

This means stop concentrating on form for a while and start focusing on content. Form is concerned with the tactical specifics of doing things. It deals with such questions as:

- Should state governments lease their existing toll highways to private consortiums and use the up-front cash they receive to fund construction of road and rail projects that have been sitting on the shelf due to lack of funds?
- Should state governments implement roadway pricing on key links of their highway systems in order to make them self-supporting enterprises and thereby ensure adequate funds for their ongoing maintenance, capital reconstruction, and expansion?
- Should state governments enter into partnerships with private firms to

build and operate new road and rail projects on a self-supporting basis?

- Should state governments try to leverage future federal grants by converting them into income streams to pay debt service on bonds they issue to fund capital construction on new road and rail projects?
- Should states use federal grant funds to capitalize infrastructure banks that make revolving loans to transportation projects?
- Should government establish objective, enforceable performance standards against which transportation providers can be held accountable—just as the EPA has done for air quality?

These are all reasonable questions. But they're meaningless until we know *what* we're trying to accomplish with transportation. This is the content issue, and we must deal with it before we can address the issue of form.

We should begin by answering four key content-related questions:

1. What is the main purpose of surface transportation systems?
2. What resources are available to make these systems better?
3. How can we best use these resources?
4. How do we measure our success in making transportation systems better?

These strategic questions have remained unanswered far too long,



Stripped to its essentials, the basic purpose of transportation is to support the nation's economy.

mainly because those of us in the transportation community rarely ask them in thoughtful ways. And it's time we started doing so.

My middle name may not be Elijah, but I would like to outline some thinking to help us frame these questions in ways that can generate meaningful answers.

The Purpose of Transportation

The answer to the first question above should be obvious enough once we cut through the tangled underbrush of wooly-headed ideas that pass for received wisdom in too many discussions of transportation. Stripped to its essentials, the basic purpose of transportation is to support the nation's economy.

One of the unavoidable facts of life is that economic activity generates demand

for moving people and goods. The more economic activity we have, the greater the demand. Therefore, the capacity of our roadway, freight rail, and public transit systems must be sufficient to accommodate this demand. Otherwise, the nation's level of economic activity is going to be less than it could be, and we'll all be poorer as a result.

A growing economy is what keeps America strong and prosperous. And effective transportation is one of the most important underpinnings for a growing economy. This means that transportation is a derived demand rather than a direct demand. It's a natural consequence of our direct demand for higher incomes and greater economic prosperity.

The size and composition of the U.S. Pacific fleet in War Plan Orange represented a derived demand. It was a natural consequence of the direct demand by the U.S. for a dominating position in the Western Pacific.

Because transportation is a derived demand, we don't find many Americans

Because transportation is a derived demand, we don't find many Americans sitting around kitchen tables or in corporate board rooms discussing it or listing it as a major national issue in public opinion polls. Effective transportation may be a silent prerequisite for achieving many of the national goals Americans like to discuss, but it lacks inherent sex appeal and is therefore easy to ignore.

sitting around kitchen tables or in corporate board rooms discussing it or listing it as a major national issue in public opinion polls. Effective transportation may be a silent prerequisite for achieving many of the national goals

demand have no economic significance. They're simply idle joyriding, in other words—trips we could easily do without. The overwhelming proportion of these new induced-demand trips, however, has considerable economic

Antitransportation types imply that new trips generated by induced demand have no economic significance. They're simply idle joyriding, in other words—trips we could easily do without. The overwhelming proportion of these new induced-demand trips, however, has considerable economic significance.

Americans like to discuss, but it lacks inherent sex appeal and is therefore easy to ignore.

This may help to explain the appeal of arguments by antitransportation types, who often masquerade as “concerned environmentalists” in opposing as self-defeating many new transportation projects (especially roads) to address capacity shortfalls. At the core of their arguments is a concept they like to call induced demand. This means that a new road or other transportation facility will simply encourage more people to make more trips until eventually its new capacity is saturated, leaving us right back where we started.

This is logical enough as far as it goes, but antitransportation types imply that new trips generated by induced

significance. People making them are doing so to buy or sell goods and services, to produce or consume in ways that weren't previously possible.

In other words, these trips generate new economic activity that couldn't otherwise take place. Therefore, the induced-demand potential of building new capacity for moving people by road and rail means that such projects don't merely fill a passive role of accommodating existing economic activity. Rather, they can play an active role in stimulating new economic activity. As such, they become tools for growing the economy.

Of course, not everyone regards economic growth as a good thing. Those who subscribe to a Marie Antoinette view of society may find it



inconveniently disruptive, especially if such growth provides opportunities for the “wrong kind of people” to rise in the world, to realize their full human potential through hard work, to enjoy decent living standards, and to share in the economic and social benefits formerly monopolized by those who were born into the “right families.”

The ranks of the antitransportation types are full of these “Let them eat cake” acolytes. Their numbers may not be great in percentage terms, but their influence can be enormous. And the preponderance of lawyers among them have become experts at exploiting environmental regulations to entangle new transportation projects in dense

thickets of litigation that can drag on for years, until they’ve watered down the meaning of such projects into an exceedingly thin gruel. It’s all part of their insistence on freezing in time an antiquated social status quo against the liberating power of anything that smacks of economic growth.

Needless to say, we can’t blame all our transportation woes on these antitransportation people, especially when we’ve done so much to help them by failing to come up with sensible programs for ensuring the kind of mobility our nation requires.

At least part of the problem may be that we have yet to develop a coherent strategic vision of what an effective system for moving people and goods by road and rail should look like—not just for today, but for half a century down the road. Developing a coherent vision for transportation requires that we look into the future to identify the kind of services that transportation systems must provide. Then, we can work backward to flesh out the details of the specific needs these systems must satisfy. This involves two kinds of strategy-oriented activities:

- First, we must understand the external environment within which transportation systems function, both now and in the future. The external environment is what determines the demands placed on transportation systems. Evolutionary changes in this environment will affect future

At least part of the problem may be that we have yet to develop a coherent strategic vision of what an effective system for moving people and goods by road and rail should look like—not just for today, but for half a century down the road.

transportation demands. So we must position ourselves ahead of the curve to understand how these demands may evolve. This means that our analysis of the external environment must be ongoing.

- Second, we must know the details of the needs that transportation customers are willing to pay good money to have satisfied. We do this by conducting the right kind of market research. Inevitably, customer perceptions of their needs change over time as they respond to changes in the external environment. Thus, market research, too, must be ongoing.

Note the repeated use of the term “ongoing.” This is no accident. Good strategy is never “finished” like a formal landscape painting. It’s always a work in progress, just as War Plan Orange was. Therefore, we must always be scanning the horizon for new challenges to which our strategies have to respond.

Analyzing the External Environment

In 1954, Elia Kazan celebrated the tradition-bound world of intercontinental goods movement in his Oscar-

winning film *On the Waterfront*. But who could have imagined that this world was on the verge of becoming as obsolete as the Marlon Brando character’s boxing career?

Two years later, in 1956, an entrepreneurial trucking magnate named Malcom McLean first arranged to pack hundreds of individual crates of goods into a few large steel containers that could quickly and efficiently be transferred by mechanical cranes between oceangoing ships and land-based trailer trucks without disturbing their contents. Quite a change from the age-old tradition of having large crews of dock workers slowly move each crate by hand from ships to trucks and vice versa.

This marked the birth of the goods movement concept we now call “containerization.” By slashing the costs of moving goods from one part of the world to another, it made possible huge growth in transglobal trade. Today, a person in Kansas City can buy consumer goods mass-produced in China for a fraction of the price his grandparents would have had to pay. In the process, containerization totally transformed the infrastructure and

operations of the ocean shipping and port industries.

We should remember that containerization wasn't the brain-child of either industry. It was initially conceived and developed by a visionary outsider who imposed it on reluctant ocean shipping and port operating firms, which would have much preferred to keep on doing the same old things in the same old ways.

In other words, containerization became part of the external environment within which ocean shipping and port operations had to function. So these classic industries had to learn how to understand containerization's implications for their businesses. We must do the same when it comes to the external environment within which transportation functions.

One key variable in the external environment affecting U.S. ambitions in the Far East during War Plan Orange was the geophysical reality of the vast Pacific Ocean. The ocean was the only practical trade corridor between Pacific Rim nations and the Western Hemisphere. So freedom of passage for commercial ships in the Pacific had to be secured and enforced by a strong fleet of U.S. warships.

Another key variable was that Japan was the most industrially advanced Asian nation at the time. Understandably, Japan believed it should play the leadership role in the development

of the Pacific Rim. This made rivalry and conflict with the U.S. inevitable.

A third key variable was the rapid development of warship technology during the first two decades of the 20th century. This made each new class of warships much more effective than previous classes, which imposed very expensive naval construction programs on the U.S. and Japan.

Today, the key variables of the external environment for surface transportation conveniently group themselves into four broad categories: economic, demographic, technological, and sociopolitical.

Economic Variables

The most important of these variables are those involving trends in the growth of gross domestic product (GDP) at the national, state, and local levels as well as within different industries. GDP is how we measure the level of economic activity, which is what creates the demand for moving people and goods.

Other economic variables include inflation, employment levels (in gross number terms and as a percentage of the total labor force), capital formation (by both the private and public sectors), and the government fiscal picture (federal, state, and local).

Demographic Variables

These variables concern people. Ultimately, it's people who produce

GDP, people who demand transportation of various kinds and in various quantities for various travel purposes, and people who generate the financial resources to fund transportation systems. So we need to know:

- How many people will live in the United States at various points in the future?
- Where are they likely to live (by state, by local regions within each state, and by multistate regions like the East and West coasts)?
- How many will live in single-person versus multiperson households (with and without children)?
- How old will they be? (It's no secret that the rising proportion of senior citizens will impose new mobility needs we've never had to confront in the past.)
- How large will their incomes be? (This information helps to define how much they can pay for transportation.)
- How much education will they have? (Higher levels of education tend to make people choosier about what they'll pay for and more willing to make use of new technologies.)

In the arena of the social sciences, demographics is capable of providing projections that tend to be closer to the physical sciences in terms of precision and accuracy. So these projections are especially helpful in determining the shape of the future.

Technological Variables

Surface transportation is on the verge of becoming awash in new technology that may be just as transformational as containerization was for ocean shipping and port operations.

We already have new technologies for collecting roadway tolls without slowing the speed of motorists, for measuring the average speeds and densities of traffic flows on roadway lanes at any given moment, and for pinpointing the location of buses and other public transportation vehicles on their routes. But just over the horizon are technologies that have the potential to make transportation much safer and more efficient, by:

- Providing instant communications between roadway operators and motorists concerning bottlenecks and alternate routes;





- Preventing traffic accidents;
- Minimizing deaths, injuries, and collateral damage in accidents that can't be avoided; and
- Monitoring the contents of goods movement containers traveling by road, rail, and air without disrupting traffic flows.

These new technologies, however, can be as much curses as blessings unless we learn how to properly manage their transfer from the idea stage to the marketplace.

For example, we face the prospect of having to evaluate the pros and cons of implementing tolls on limited-access highways and of entering into concession agreements with private firms to operate these highways. But how can we do this realistically until we understand the likely impact of new

technologies on these highways down the road?

We need as much information as possible about what these technologies are. How they work. What they can do. What problems they pose.

Also, let's not forget that the design and use of any technological innovation must be customer-driven, not provider-driven. So obvious, yet so often overlooked.

Sociopolitical Variables

Identifying and evaluating these variables may often seem like exercises in pure futurism. But this doesn't mean we should think of them as idle speculations. Even when the results of such evaluations may seem to lack the scientific precision of demographics, information about the form and

content of these variables can be very important in helping us determine the future shape of the external environment.

Special emphasis should be placed on the potential impact of the following sociopolitical issues:

- Continued increases in global trade (which stimulates further competition between nations and demands that we regard American transportation systems as links in worldwide travel chains, not stand-alone entities protected by national borders).
- Returning to the progressive-tax policies of the high-growth Eisenhower era in the 1950s (when the proportion of a person's income paid in taxes increased as the size of his income increased) rather than continuing current trends toward a flat-tax policy (which generally has the opposite effect).
- More open policies regarding immigration (leading to a larger proportion of American residents being born abroad) rather than tighter policies (leading to a larger proportion of residents being native-born).
- The increasing concentration of the American population on the East and West coasts, accompanied by pervasive depopulation in many areas between these coasts.
- Growing political clout among increasingly numerous senior citizens,

who will insist that American society provide them with comfortable retirements, special treatment of their particular needs, and meaningful protection of their purchasing power after their working days are over.

- A continued decline in the willingness of corporate America to provide current and retired employees with the kind of social welfare services traditionally provided by government in Europe and elsewhere.
- Further replacement of the traditional mass markets for goods and services by niche markets as consumer demand becomes more sophisticated and industry responds by "customizing" its production methods.
- The willingness of people to cram more living into each day by making use of timesaving technologies like cell phones and the Internet.
- More ethnic, income, and educational diversity in workplaces and markets.
- Single-person and no-children households becoming dominant household types.
- A rising concern for environmental issues and the conservation of natural resources.

There's a vast amount of information already available about these four categories of variables. It takes the form of books, articles, and special studies. Our task is to turn this information into cogent scenarios detailing the likely patterns that will

define the future shape of the external environment for transportation.

But simply describing these scenarios is not enough. We also need to accommodate the key reality of uncertainty into each one. In the case of scenarios for future GDP growth, for example, we want to be able to tell the public (not to mention each other) that:

“There are 9 chances out of 10 that national GDP growth during the next 10 years will average at least X percent per year, 3 chances out of 4 that it will average at least Y percent (larger than X), and 1 chance out of 2 that it will average at least Z percent (larger than Y).”

Once we understand the external environment for surface transportation, we can move on to the task of developing a serious strategic vision of what an effective transportation system should look like.

The “Ideal Model” Benchmark

As this vision takes shape, we may find it helpful to sketch out some of the transportation possibilities that occur to us along the way. These wouldn’t necessarily be firm proposals that anyone expects to implement; rather, they would be illustrations of the vision’s potential under ideal circumstances. As such, they can provide benchmarks against which we can measure the effectiveness of actual proposals that emerge further down the road.

Here’s an example.

Once upon a time (way back during the first decade of the 21st century), the government of a major industrial state became concerned about severe traffic congestion and other transportation problems in its largest metropolitan region. It worried that failure to address these problems could limit future economic growth in the region.

This would have significant repercussions throughout the state. And since the nation’s 20 largest metropolitan regions generate more than half its GDP (even with only about 40 percent of the U.S. population), the national consequences could be very troubling.

After due consideration of various alternatives, the state government created a new, independent commercial enterprise called Metro Transport to take over responsibility for the metropolitan region’s deteriorating and increasingly costly roadway system. This included its limited-access expressways, its boulevards and other important arterials that connected with the expressways, and its many miles of local-access streets.

Metro Transport was charged with being fully self-supporting. It did this by using electronic toll collection technology to charge motorists mileage-based tolls for travel on the region’s heavily used expressways (something even the White House was then beginning to take seriously).

These tolls were set at rates designed to generate sufficient revenue to cover the costs of operating the roadway system to state-of-the-art standards. The tolls were also intended to help maintain the system at something close to showroom-new condition, replace worn-out links and other facilities in a timely fashion, expand lane capacity as needed to accommodate growing travel demand, and produce a reasonable return on invested capital.

As an independent enterprise that was supported entirely by the motorists who used its roadways, Metro Transport received no tax subsidies of any kind. This freed it from any dependence on federal, state, and local motor vehicle fuel taxes (which were no longer collected in the region), as well as from annual appropriations in the hard-pressed budgets of the local governments in the region's central city and its five suburban counties. Not to mention capital construction grants from the federal government.

Electronic toll collection enabled Metro Transport to easily vary its mileage-based toll rates on short notice. Therefore, it could use such differential pricing to induce some trips to be made during times of the day when travel demand was lower, or to be made on roadway links that were less heavily used. It could even offer motorists using toll expressways money-back "performance guarantees"

in the best customer-oriented tradition of enlightened consumer product corporations, reducing toll rates proportionally if traffic speeds fell below the posted minimum.

The effect of rationalizing travel in this way was to increase the functional efficiency of the region's roadway system by raising its aggregate daily vehicle throughput. The result was the same as expanding capacity by adding new lanes, but without the high cost and other problems associated with roadway construction.

The basic idea behind Metro Transport came from a detailed study of the semi-independent Chinese metro-



politan region of Hong Kong, whose aggressive embrace of free-market capitalism has helped its nearly 7 million residents enjoy one of the highest per-capita levels of GDP in the world.

Over the years, Hong Kong's regional government has established and capitalized various commercial corporations to carry out important economic development functions. These include building and operating its subway system, its commuter rail system, and its international airport complex—all of which are widely regarded as among the best in the world. Also included is Hong Kong Disneyland, an amusement theme park that is very successful.

This concept of “government venture capitalism” has even extended to selling minority ownership shares in these corporations to private investors through Hong Kong's stock market once they've established good track records for profitability. In the best traditions of private-sector venture capitalism, doing this enables Hong Kong's government to recover some of its originally invested capital and put it to work in new development projects to help the region's economy grow.

Balanced Ownership

To raise some of the capital funds needed to restore and improve the roadway system, Metro Transport sold equity ownership shares to private

investors. These investors were attracted by the promise of secure dividends from Metro Transport's toll revenues. And under properly structured limited partnership arrangements, such dividends were partially sheltered from federal income tax

Equity is a form of “patient capital” that's been too long overlooked for public-purpose capital facilities that are financed by governments or public authorities.

liability by having Metro Transport pass through to investors its deductions for debt interest and tax depreciation. This further enhanced the after-tax value of these dividends to private investors.

By tapping into the growing sources of equity capital throughout the world, Metro Transport was able to reduce the amount of debt it had to issue to fund its capital programs. Equity is a form of “patient capital” that's been too long overlooked for public-purpose capital facilities that are financed by governments or public authorities.

Needless to say, the gut instinct of private investors who owned equity shares in Metro Transport was to press

for policies that maximized its profits. Among the public, this raised fears that Metro Transport would charge the highest toll rates possible while providing the least service it could get away with. So if this independent enterprise concept was to fly, it had to include credible protection of the public interest.

The usual way to accomplish this is through the traditional public utility model: Create some sort of state government commission to regulate the enterprise's rate structure; impose minimum service standards; and generally ride herd on its operations through a host of micromanagement oversight procedures that generate lots of paper but too often compromise efficiency.

But the creators of Metro Transport came up with a better way.

This involved securing a second group of owners for the entity: the state and local governments in the metropolitan region, who transferred ownership of their roadways to the enterprise, receiving in return equity shares in lieu of cash and due representation on Metro Transport's board of directors.

The gut instinct of these government owners was to push for policies that maximized votes for their elected officials. This generally translated into having Metro Transport provide lots of service while keeping



toll rates as low as possible, the polar opposite of the natural agenda of the private-investor owner group.

In theory, competition between the natural agendas of these two owner groups should have led to “balanced policies” for Metro Transport, meaning reasonable service levels at toll rates the public would find acceptable.

But as Arnold Rothstein and Johnny Torrio learned from contemplating the periodic bloodbaths that afflicted rival bootlegging gangs during the Prohibition Era, competition can produce all kinds of disagreeable problems in practice. In the case of Metro Transport, these problems could take the form of policy stalemates that prevented a great many important things from getting done.

To avoid this, the creators of Metro Transport established a third group of owners. This group consisted of business firms whose sales revenues depended on the level of economic activity in the metropolitan region. They included commercial banks, utility companies,

large retail chains, trucking and other business services firms, and media companies that lived off sales to local consumer advertisers.

The gut instinct of these new owners was to push for Metro Transport policies that ensured decent, affordable transportation that would be able to accommodate travel demand in a fiscally sound manner so that the region's economy (and therefore their sales revenues) could grow. This made this third group natural referees between the narrow, profit-maximizing agenda of the private-investor owner group and the equally narrow "voter popularity" agenda of the government owner group, greatly lessening the likelihood of policy stalemates.

Endless Innovation

During the years since Metro Transport began operating, it's delivered a host of improvements to roadway transportation that would have seemed like impossible dreams to motorists in the metropolitan region back in the early years of the 21st century, when revenues from penny-per-gallon motor vehicle fuel taxes had ceased to grow; the overprogrammed Highway Trust Fund ran short of tax revenues and had to renege on many of its promised construction grants; appropriations for roadway maintenance from local government budgets had to give way to new spending for antiterrorist

protection, educational mandates, and other agendas with greater sex appeal; and the overall condition and capacity of the region's roadway system fell further and further behind what was needed to support the local economy.

Equally important, Metro Transport became recognized as the only practical source of new revenues to revitalize transportation in the region. This led to some interesting innovations.

One of these involved an ancient, virtually moribund railroad company whose right-of-way ran through the region from east to west and skirted the central city's central business district (CBD). It had been in bankruptcy for many years and had long since ceased paying property taxes to any of the local governments along its right-of-way. But all this changed when the senior managers of Metro Transport put together a provocative deal.

Under Metro Transport's leadership, the local governments that were owed many years of unpaid property taxes formed a special creditors' committee and exercised their legal right to seize the railroad's right-of-way for nonpayment of taxes, which they immediately leased for a token sum to Metro Transport.

Working closely with two large multimodal goods movement corporations that served the region, Metro Transport used some of the profits from its toll roads to upgrade the right-of-way's

freight tracks and build a new rail/truck transfer facility in an abandoned railroad yard near the CBD. This permitted the shifting from road to rail of a significant number of goods movement trips to and from the region, thereby reducing shipping costs to regional firms that depended on efficient goods movement

support these nonroad transportation modes, but Metro Transport argued that the region (including its motorists) could only benefit from greater integration between what had too long been regarded as entirely separate travel modes. After all, every goods movement trip that shifted from road

This concept of cross-subsidization has long been practiced by some of the best managed multiproduct corporations. What matters to them is the overall bottom line. If this can be boosted by having one product help support another within the larger corporate framework, then cross-subsidization is scarcely a dirty word. Why should it be any different in the transportation world?

services and, not so incidentally, freeing up lane space for motorists.

Metro Transport then turned around and formed a partnership with the region's bus-operating transit authority to build a light-rail line in the right-of-way. Metro Transport issued new debt (secured by its toll revenues) to supplement state government capital funds to fund this construction. This gave the region a modern rail transit line to shift some CBD-oriented commuting trips from automobile to rail, freeing up still more lane space for motorists.

Some people were opposed to using toll revenues provided by motorists to

to rail freed up roadway lane space for motorists. Ditto every CBD commuting trip shifted from car to light rail, especially during high demand periods.

As Metro Transport's CEO stated at a public forum on the region's transportation needs:

"We've gotten into the bad habit of seeing transportation modes as being like a collection of kiddie rides in a public amusement park, where the popularity of each ride depends on its separate and distinct character.

"But in the real world, transportation customers don't care about the physical distinctions between different modes. What they care about is moving

themselves and their goods from door to door in the fastest, most efficient manner. If this means that a particular trip uses more than a single mode, so be it. And if integrating all modes into a single, seamless system of regional

that the true value of idealized models like Metro Transport doesn't depend on whether they can ever be implemented in the form in which they first appear. Rather, it lies in their ability to stretch our minds during the vision devel-

Management guru Peter Drucker said, "The primary goal of every enterprise should be to *create customers*." Creating customers is the *only* goal that matters if an enterprise is to justify its existence in a modern capitalist society.

transportation requires using some revenues generated by one mode to help support another mode, who cares? It's the end result that counts.

"This concept of cross-subsidization has long been practiced by some of the best managed multiproduct corporations. What matters to them is the overall bottom line. If this can be boosted by having one product help support another within the larger corporate framework, then cross-subsidization is scarcely a dirty word. Why should it be any different in the transportation world?"

"That's why Metro Transport wasn't named 'Metro Roadways.' Our mission is to improve the region's *total* transportation complex in an integrated manner. Because that's the best way to serve the public's mobility needs."

Again, we should keep in mind

opment process—by showing us some of the possibilities inherent in sound strategic visions.

This is how we harness essential feedback between vision and reality, just as those who produced War Plan Orange did.

Creating Customers

Most of us in the transportation community already have our own ideas about what an appropriate strategic vision should be like. But our ideas aren't what matter. Rather, it's the ideas of our customers that are important.

More than a generation ago, management guru Peter Drucker said, "The primary goal of every enterprise should be to *create customers*." To make sure there was no confusion about this message, Drucker went on to tell us in no uncertain terms that the traditional

accounting focus on generating profits is not a proper goal for any enterprise that wants to be successful. An adequate level of profits is simply one of the costs that the enterprise has to cover with its revenues, just like salaries and wages, payments to suppliers, and capital investments in new plants and equipment. Creating customers is the *only* goal that matters if an enterprise is to justify its existence in a modern capitalist society.

Drucker's revolutionary insights about the importance of creating customers became the driving force behind the management discipline we now call marketing.

Unfortunately, this choice of terminology is a poor one and has led to much confusion through the years because an entirely different kind of activity has a prior claim to the name.

Remember when we were kids and heard our mothers talk about "doing the marketing"? This meant going to the supermarket to buy the weekly groceries. To our mothers, marketing had nothing whatever to do with the task of creating customers for goods and services. It simply involved keeping the family cupboard stocked. This may account for the confusion in many circles over what the management discipline called marketing is really all about.

Despite its poorly chosen name, the intelligent application of

marketing as a management discipline has been the hallmark of every successful American enterprise during the past generation. And we must make it a cornerstone of our efforts to plan, build, and manage the kind of integrated transportation system that can properly support future economic growth. In short, responding to customer needs should be the primary driver of efficient allocation of transportation capacity.

Responding to customer needs should be the primary driver of efficient allocation of transportation capacity.

The four most important components of marketing are:

1. Defining who our customers really are;
2. Identifying important needs that these customers will pay good money to have satisfied;
3. Developing solutions that satisfy those needs; and
4. Aligning the entire enterprise around creating value for customers.

These are the most important tools for creating customers. And they're just as relevant for developing effective transportation systems as they are for developing

effective computer software or automobiles or toothpaste.

So we should begin by identifying important customer needs in the arena of transportation. We may think we already know what these needs are, but our ideas are really just guesses, because we have depressingly little factual information about what transportation customers themselves identify as their needs. And we can't expect to develop truly effective transportation by relying on guesswork.

We obtain this critical information about who our customers are and what they see their needs to be through a process known as market research.

Market research involves spending lots of face time with customers listening to them talk about their transportation needs. In this way, we gain

a qualitative sense of how they define their transportation needs—which needs they regard as worth paying good money to have satisfied, what concerns they have about things like travel safety and security, and how they categorize themselves as transportation customers.

Listening to our customers will also help us identify the main issues we must examine further through formal surveys. If these surveys are properly designed and statistically credible, they'll provide us with the essential quantitative data needed to assess the relative importance of various transportation needs and to define priorities for meeting them.

The right kind of market research will give us, for the first time, the facts we need to determine what an effective transportation system for the nation should look like in order to meet the needs of its many different kinds of customers.

But just as with analyzing the external environment for transportation, market research can't be thought of as a one-shot effort. It must be ongoing, for two important reasons:

The views of our customers are the only meaningful way we have to measure our success in developing the kind of transportation system the nation needs. We have to let our customers tell us whether we're doing the right kind of job. This means listening to what they have to say at frequent intervals.



Customer needs are likely to evolve over time. Given the long lead time needed to plan and build transportation facilities, we must try to get ahead of the curve in anticipating

The Responsibility Issue

In an ideal world, it might seem logical to assign this responsibility to the federal government's Department of Transportation. After all, we're talking

Simply playing catch-up ball is one of the reasons why so many of our major metropolitan regions are crippled by traffic congestion. Ongoing market research is the only way we can anticipate tomorrow's transportation needs soon enough to meet them in a timely fashion.

how customer needs are evolving. Simply playing catch-up ball is one of the reasons why so many of our major metropolitan regions are crippled by traffic congestion. Ongoing market research is the only way we can anticipate tomorrow's transportation needs soon enough to meet them in a timely fashion.

Planning and managing the ongoing functions of analyzing the external environment and conducting effective market research are major undertakings. But they must be done before we can develop a meaningful strategic vision of what transportation in America should look like. So we have to make some decisions about where the responsibility for carrying out these undertakings should lie.

about issues of national significance that the federal government should presumably handle.

But today's federal government is a far cry from the federal government of the 1930s and '40s. That government carried us bleeding and moaning out of the Great Depression, developed and carried out the strategies to defeat Germany and Japan during World War II, propelled us after the war into the greatest era of economic prosperity and world leadership we've ever known. It also provided the national momentum that led to the Interstate Highway System, the space program, and ultimate victory in the Cold War.

The federal government of the 1930s and '40s seemed to epitomize the can-do spirit of American know-how

Forward-thinking state transportation departments are already seeking new ways to implement badly needed transportation improvements that don't rely on Washington, even to the extent of forming partnerships with the private sector to tap its management expertise, marketing savvy, and capital resources.

like no other government in our history. And we could generally trust it to do things right.

But today's federal government is a pale shadow by comparison. And we have little confidence that it can do anything right.

Fortunately, there are encouraging signs that state governments are willing to step into the vacuum left by a federal government that has lost too much credibility. Forward-thinking state transportation departments are already seeking new ways to implement badly needed transportation improvements that don't rely on Washington, even to the extent of forming partnerships with the private sector to tap its management expertise, marketing savvy, and capital resources.

This suggests that state DOTs should assume responsibility for analyzing transportation's external environment and conducting market research among their customers. They might begin by tapping the resources of their state university systems. Such an approach would build on the earlier tradition of states establishing colleges

of agriculture to develop and promote new techniques for improving what was, for many of them at the time, their most important industry. Today's challenge may be to improve transportation rather than agriculture, but the challenges are similar.

Just as in agriculture, it's unlikely that all states will have the same mix of transportation demands. State DOTs are closer to their customers and instinctively more responsive to their needs once they have good information about what these needs are. At the same time, there's an encouraging trend among state governments to share information and ideas. The federal government can help by providing state DOTs with planning grant money to support ongoing programs analyzing the external environment and conducting market research.

Such a shift in responsibility and power from the federal government to the states isn't confined solely to transportation. Rather, it's part of the much larger devolution issue that's attracted the attention of political economists like Gar Alperovitz, Alberto Alesina,

and Enrico Spolaore. They've been exploring the question of whether the United States may have grown too large to be effectively managed from Washington any longer.

Back in the early 1800s, James Madison thought this might become inevitable if the nation's population kept expanding. Economists like to call this phenomenon "*diseconomies of scale*," though they shy away from using such academic jargon in public.

Large-population "nation-states" like California and Texas are already moving in this go-it-alone direction, and not just in transportation. Meanwhile, smaller states, like those in New England, are banding together in regional compacts to address common problems without waiting for Washington to bestir itself.

Since transportation is so intertwined with the national economy, there probably remains some role for the federal government to play (if only to justify its practice of taking the lion's share of every tax dollar the economy generates). This could involve implementing as national standards new concepts that creative states have shown to work; brokering agreements between neighboring states that share portions of vital intercity transportation corridors; commissioning forward-thinking studies about the shape of the future, new transportation technology, better planning practices, and so on.

Such a federal–state partnership could well be the future of a more democratic America. In that case, action on transportation problems could become one of the horses that truly workable forms of devolution ride.

Meaningful Answers

In the last analysis, this article probably raises more questions than it answers. But that's how we learn. Because the process of developing strategy begins



by asking the basic “what” and “why” questions in the right way and by continuing to ask them, so that their answers stay current with the escalating pace of change. There has to be a good fit between what an enterprise actually does and the demands placed on it by an external environment that’s never static. Only then can we proceed to

- What should we keep doing?

The fastest way to come up with meaningful answers to these tactical questions is to frame them in the context of a truly effective strategic vision for the future shape of transportation in America. One that can be as successful as War Plan Orange was in guiding the U.S. to victory in the war against Japan. In this article, I’ve attempted to show

Incremental changes to existing transportation policies and programs already rendered obsolete by history can’t possibly get us far enough fast enough to meet 21st-century challenges. The laughingstock patchworks in SAFETEA-LU surely demonstrate this.

develop meaningful strategic visions for what our transportation systems should look like. After that step, discussions of funding gaps and other issues concerning the tactical “hows” of translating these visions into reality start to make sense.

Admittedly, these tactical hows concern the issues we feel most comfortable discussing because they’re closest to our experiences as transportation professionals. Also, because they seem most relevant to the pressures we’re under to improve transportation. So we’re naturally anxious to find out:

- What should we start doing?
- What should we stop doing?

some of the lines of thinking we should pursue to develop such a vision.

It seems apparent that we’ll have to embrace some radical new beginnings to make all this work. Incremental changes to existing transportation policies and programs already rendered obsolete by history can’t possibly get us far enough fast enough to meet 21st-century challenges. The laughingstock patchworks in SAFETEA-LU surely demonstrate this. We need nothing short of a Start-From-Scratch Revolution in how we develop and manage transportation if we expect to satisfy the growing mobility demands

that are inevitable for the nation's economy to grow.

Admittedly, this may be less than comforting to those transportation stakeholders who've grown fat and happy with the status quo. But they're kidding themselves if they think that turning a blind eye can insulate them from the consequences of the future. They'll simply wind up stranded on the beach, like those unregenerate battleship admirals after Pearl Harbor who insisted that War Plan Orange shouldn't be adapted to incorporate the new reality of the aircraft carrier.

Note the liberal use of the word "we" throughout this article. It's important to define this term properly.

In the narrowest sense, "we" refers to those who plan, design, finance, build, and operate transportation facilities and services. In other words, the people on the front lines. But transportation stakeholders also include elected officials, managers, and

technical professionals in Washington, state capitols, and local governments whose responsibilities involve transportation to one degree or another.

In the private sector, important stakeholders include the many firms that provide various kinds of services to move people and goods, not to mention those firms whose primary business involves selling goods and services to transportation providers in the public and private sectors.

Finally, the most important stakeholders of all are transportation customers—whose concerns are too often overlooked.

In short, the collective "we" in transportation turns out to be much larger and more encompassing than many of us may have imagined. But it's vital that we hear all these voices if we're to develop a meaningful strategic vision of what American transportation systems should look like in the future.

Joseph M. Giglio, Ph.D., has a unique background in business, public policy, and finance that is rooted in his experience in Wall Street, management consulting, government service, and academia. He has served as the special advisor to the Office of the Secretary of Transportation and is currently vice chairman of the Hudson Institute, a leading public policy organization in Washington, D.C. In addition, Mr. Giglio teaches strategic management at the Graduate School of Business at Northeastern University in Boston. He may be reached at jmg9512@yahoo.com.