

Road Rage:

Traffic, Urban Sprawl, and How Antigravity Will Save America

By Tim Ventura, February 20, 2005 [tventura6@comcast.net]

Meg Coyle was obviously nervous – she'd made a commitment to do a television segment on Lifters and Antigravity technology for the local NBC affiliate, King-5 TV, but we'd run into a snag – a broken wire on one of my early 3-foot Lifters that was causing the device to spark and sputter while it remained firmly planted on the back deck of my house.

Coyle's office at King-5 was only about 15 miles from my house – but she'd spent over an hour in transit across Lake Washington, and another 20-minutes working with her cameraman and sound-person to properly setup to begin filming. Both she and I realized that unless we completed filming soon, she wouldn't have enough footage to air the segment that she was planning – this was a high-stakes endeavor for both of us:



Seattle: One of the most beautiful cities in North America, but not during rush hour!

For me, the possibility of failure during my first ever television demonstration of Lifters would have been a devastating setback, and I was rapidly working to cut off the broken section of corona-wire to repair the damaged Lifter and resume filming. The short section of 50-gauge corona wire was nearly invisible, and the damp morning air blowing across the deck made it nearly impossible to hold the wire long enough to repair the Lifter. Five minutes had rapidly passed, and the only thing available for filming was me holding a triangular-shaped device sitting motionless on the deck.



Antigravity: King-5 aired only 30-seconds of footage on Lifters in May 2002.

For Coyle, it meant losing a spot that she'd sold as being compelling to the management team back at the King-5 office – and because of the time invested in traveling to my house for filming, she wouldn't be able to switch topics and cover something else: the transit time in Seattle would have made it impossible to change topics at the last minute. She'd briefly seen the Lifter in flight for a few seconds before filming had begun, but by the time the cameras were rolling it had already self-destructed as a result of buffeting by the wind. If I was unable to repair it, she'd have to run the spot as coverage of "failed dreams of Antigravity" – not an appealing prospect to either of us.

Hunched over on the deck, holding a section of wire and a glue-gun in one hand, and steadying my Lifter with the other, I heard her nervously begin to make chit-chat: her attempt to break the uneasy silence while I concentrated on expediting the repairs. Her question was spontaneous, “So, how’d you get into building Lifters, Tim?” She asked, “Is your goal for Antigravity about getting into space?” My reply was swift and sure: “Nope, it’s all about traffic. Seattle traffic is horrible, and we need an alternative”.

Seattle Traffic

Traffic congestion is an equal opportunity offender – a relic of 20th century principles in transportation that were taken to their breaking point, and then pushed beyond it. It pays no heed to color, race, religious belief, nor social status. Rich and poor alike sit in bumper to bumper traffic across America’s highways – forced to sit patiently for hours and breathe the foul exhaust of the cars in front of them while they wait for the simple pleasure of arriving home from work.

I grew up in Ferndale, a small All-American farm-town located just north of Bellingham. When I was a child, a traffic jam in Bellingham meant 3 cars at a stoplight, and that was during 5 o’clock peak traffic hours.

Neither Ferndale nor Bellingham is notable for its economy, and in order to make ends meet my wife and I moved from Bellingham, where we’d met in college, down to first Olympia and then halfway back up to eventually buy a house in Kirkland. Olympia had some occasional problems with traffic, but it wasn’t until I moved to the Eastside that the real nightmare began.

Seattle’s Eastside is one of the wealthiest parts of the United States – there are a lot of reasons to move here, and one of the big ones is having millionaires for neighbors. Despite the long rainy season, it’s a good place to make money – in fact, Seattle’s Eastside has a tech economy second only to Silicon Valley in California. Since the early 1990’s, skilled labor from all over the world has been immigrating here, which was great for the local economy, but horrible for the local traffic.

My first brush with road rage came before I’d even moved to Seattle – I’d taken a job at AT&T Wireless while Danielle and I still lived in Olympia, and my boss and I were taking turns ride-sharing for the 80-mile commute up Interstate 5 through Redmond. We found that if we left Olympia at 5:00 am, our commute pushed us just past peak hours – we would arrive at the office in Redmond by 6 am, only 50 minutes later. However, if we were running behind, leaving the park and ride in Olympia at 5:15 am meant that we’d arrive in Redmond at sometimes 8 or 9 in the morning – the extra time being spent sitting in Seattle traffic.

What happens when you’re on a deadline to avoid traffic? You lapse into a mode of thinking that leads to speeding, sloppy driving, and poor driving habits – this

wasn't just us, but we quickly found ourselves pushing my 1999 Red Pontiac Grand Am past the point of no return at 90 miles per hour or more. There's nothing like coming up on a traffic-jam doing 90 – especially at 6am without having your morning coffee.

The trip home to Olympia was even more laborious – we'd try to leave the office by 3pm, but if we missed our deadline we often stayed until 6pm before leaving. We found that in either case, we'd arrive home around 8 at night – once again demonstrating how much time traffic wastes.

What we saw on the way home was often disturbing: the Interstate-5 stretch of pavement through Federal Way is about a 30-mile piece of road with 5 lanes, and all 5 would be stopped regularly because of accidents. Traffic was usually stopped because of accidents, and the accidents occurred for a number of reasons: sloppy-driving, poor automobile maintenance, and bad manners on the road, as well as occasional bouts of road rage.

A Taste of the Future

The traffic wasn't as disturbing as the accidents were – not just seeing the wreckage of 5 or 6 cars at a time spread out over the freeway, but also seeing dead-bodies laid out straight on the edge of the road, while paramedics worked frantically to perform CPR on the survivors. I'm not describing a rapid glimpse of a body-bag seen from a window while speeding past an accident, because in rush hour traffic you may be parked next to just such a row of bodies for up to half an hour.

It seems that everybody speeds on the freeway when they have the chance, and when they hit the traffic-jams occurring along stretches of Interstate-5, not all of them can slow down enough in time. This is partly a human reflex – all of use become desensitized to danger after a while, and when you drive in traffic long enough being a foot away from a semi-trailer driving 80 mph down the road doesn't make you nervous: it should.



I-5 Corridor: Traffic congestion brings this freeway to a standstill during rush hour.

Another sight that I thought I'd never see in America is police-cars pushing burning cars off the side of the road – during rush-hour traffic in Seattle, the fire-engines can't arrive until the freeway is clear for them to drive down, which means that the police push the burning wreckage onto the shoulder of the road, and simply hope that the thick plume of choking smoke doesn't obscure traffic enough to cause yet another accident.

My commutes with David Mirabal only lasted for about 3 months before Danielle and I moved to Kirkland. The traffic was still bad, but sitting for half an hour next to a resort on Willows Road is much more pleasant than being surrounded by cars on the Interstate. As it turns out, though, the nightmarish images of commuting that I had from those first 3 months would be revisited in 2003.

Like most of the new immigrants to Seattle, I'd made sure to position myself so that my work-commute to the AT&T Fixed Wireless office was a short hop across town from my house. One of the reasons that houses are so expensive both in Seattle and California is because residents in these areas are willing to pay top-dollar to shave off even a few minutes from their daily commute, and in my case I was making enough income to afford a nice house only ½ hour from the office – a distance of 8 miles away.

A lot of people had found creative solutions for their commute during the Seattle dot-com/dot-telecom boom in the late 1990's – in fact, the commute distance was often a determining factor for where many tech-industry coworkers chose to work. This was a manageable affair until 2001, but after the bubble burst commuter convenience played second-string to the ability to bring in basic income.

At the beginning of the dot-com bust in mid-2001, I'd naively hoped that traffic might get better. After all, with thousands of tech-employees being laid off, they wouldn't be commuting into the tech-centers at peak hours, which should alleviate traffic congestion. In reality, what happened was the opposite:

After AT&T shut the doors on the Fixed Wireless Project in 2002, I became one of thousands of IT and telecom industry employees desperately seeking a new company to call home. Despite my success in building the American Antigravity website, I had to make ends meet, and after a long, hard 6 months of job-hunting I finally found the answer: a year long contract managing a software-development team at Telecommunication Systems in Seattle.

Nightmare Part II

My 3-month commuting ordeal with David Mirabal in 2000 had prepared me for dealing with traffic, but David and I had always taken Interstate-405 interchange to the Eastside so that we could avoid Seattle itself. You see, metro-area traffic has spread to encompass far more than just Seattle – in fact, it affects traffic for about 50 miles in each direction, as people purchase houses father and farther away from the city to avoid high housing prices.

However, not long after taking the contract at Telecommunication Systems, I realized that there could be no avoiding “real” Seattle traffic – my new commute would take me across the Interstate 520 floating bridge



I-520 Bridge: Light Sunday morning traffic.

directly into the heart of Seattle, where I would have to park in a \$12 per day “discount” garage and walk another 2 blocks to my new office.

Seattle’s Eastside was built on a variant of the same grid-layout that Los Angeles uses – if you’re not on the freeway, you can weave your way through streets to take any number of paths to reach your destination. Seattle itself, however, is quite different: it was originally a port-city built around the old horse and cart paradigm, and the layout of the streets is unpredictable. Dangerous blind corners abound, and one-way streets mean that during rush hour you have a mass exodus of traffic passing through only one or two overcrowded arterial roads.

I developed a driving strategy that would get me the 2 miles to the freeway within half an hour of leaving the office; from there, it was another mile on Northbound I-5 so that I could take Eastbound Interstate 520 over the floating bridge to Redmond, Kirkland, and Bellevue.



I-520 Bridge: Packed beyond capacity during rush-hour traffic (4-8pm)

Driving into and out of Seattle everyday – a task that I did for just over a year – wasn’t just a commute -- it was a journey, and an adventure. Every stage of the commute had unique traffic-related issues: inside of Seattle, traffic-signals became irrelevant to drivers running red-lights, cutting each other off, honking and yelling at each other, and accelerating sometimes up to 60 or 70mph on city-streets to make the next light before it turned red. It was a fast-paced, hectic challenge punctuated by danger at every turn – an utterly exhausting experience based more on luck than anything else.

After reaching the 520-bridge, the opposite occurred – overcrowding from a 3-direction interchange meant that I’d spent at least an hour sitting in traffic on the bridge in the middle of a lake. During winter, a strong northbound wind carried salt-water waves over the guard-rail, spraying cars that were driving at a 10 mph snail’s pace because the bridge was moving underneath them. I never thought that I’d get seasick from driving – and then I realized that in Seattle, anything goes.

Do these scenes disturb you a bit? They should – and what should disturb you more is that they’ll be coming soon to a city near you, if they haven’t already. Again, this isn’t case of being able afford better. Higher salaries and gainful employment mean living close to where the work is, no matter how wealthy you are. Thus, even the rich aren’t immune to traffic congestion, which as a stunning realization that I quickly made in Seattle.

Bill Gates

William H. Gates III is the richest man in the world – Microsoft brought him both fortune and fame, and the stock options that he gave his employees have peppered the hills of Seattle’s Eastside with hundreds of millionaires. Rich people on the West Coast aren’t insulated from the public like they are on the Eastern Seaboard – out here they live, work, and play amongst the rest of us.



Bill Gates: Seattle’s most famous resident is no stranger to traffic-jams.

One of the big news stories a few years ago was Bill Gates house – it got a lot of press coverage by virtue of being a marvelous new breed of “smart-house”, and the ‘Gates Mansion’ received worldwide press as a result. If he’d lived on the East Coast, Gates might have put the house miles from the city and hired a town-car for all of his duties – but since he lives in Seattle, it was right in town. In fact, I used to have a view of it every day from the Eastbound 520-Bridge.

I’m positive that one of the reasons that Gates built the house where he did was to reduce commute time from his location in Medina to his offices in Redmond, Kirkland, Seattle, and Issaquah. He lives next to several other millionaires – Medina is the coastal part of Bellevue, and property values there are probably the highest in Washington State. Despite expensive real-estate, though, it means that Gates has to deal with the same traffic as the rest of us.

Danielle and I only live about 5 miles North of Bill Gates house in Medina – we actually drove down his street while we were house-hunting in 2001, and I’d estimate that it puts him about 10 minutes away from us not accounting for traffic – but since he lives less than a mile from the 520-bridge, I’d guess that during rush hour that same drive might take well over an hour.

Despite his enormous wealth, one of the more well-known stories about Bill Gates is that his infamous Porsche 959 was impounded by the U.S. Customs Service upon arrival in the United States, because Porsche had never allowed crash-testing on the car to meet American safety standards. It’s odd that they’d pick a brand-new luxury sports car to make an example of for Seattle roads, as one of the major causes of traffic is actually from older-vehicles breaking down in traffic – and the authorities have never bothered to check this aspect of driver safety before commuters take to the streets.



Porsche 959: Gates’ was impounded, but these aren’t the cars causing accidents on Seattle roads.

The family anecdote is that despite his fabulous wealth, Gates apparently frequents the local “Burger Master” – a 1950’s style drive-in minus the roller-skating waitresses. My mother-in-law bumped into him there eating a burger in another Porsche in 1999 – not because Burger Master serves the best food, but because in Seattle it’s often not worth the effort to fight traffic for fine-dining.

Fear and Loathing in Seattle

Bellingham’s expanded a lot in the decade since I’ve lived there – I loved the town’s quaint college charm, but on a recent trip to visit my parents we ran directly into a traffic jam while passing through the city on our way North. The traffic-jam was the result of unplanned expansion from an increasing population – people love the little town because it was near the Interstate, and not overpopulated, so they’ve been moving there regularly for the last few decades. The reason that I mention it is this: if you thought that by living in the country you could avoid traffic, you’re completely wrong – you’ve just postponed the inevitable.

You see, on the East Coast most of the established roads have been in use for centuries. If you asked the locals in most East Coast cities how old a particular road is, they wouldn’t be able to tell you – the only thing that they’d know is that traffic is worse than ever. The West Coast is a lot newer territory, however – most of the cities in Washington State were sparsely populated until the 1970’s, which gives residents of our state a first-hand look at population sprawl.

Los Angeles was the same way in the 1950’s – within less than 20 years, traffic had peaked from sustainable 1940’s levels to the beginning of severe traffic problems in the 60’s. Forty years later, not only is traffic as bad as ever, but urban sprawl from suburban residents trying to avoid this traffic is choking a vastly expanding area with new traffic problems.

Washington State is a couple of decades behind California – but Seattle has some unique problems because our roads are more similar to those in San Francisco than the ones in Los Angeles. Both cities are built on rolling hills, and both are around sheltered port-areas, meaning that urban sprawl can’t form a constantly expanding perimeter around the city like it does in LA – traffic hits a variety of choke-points and bottles up.

Traffic and urban-sprawl aren’t a consequence of a growing population, as many sociologists and urban planners would have you believe – they are a consequence of the inherent limitations of contemporary surface transportation.

It’s really a vicious cycle – a city pays higher salaries than the surrounding countryside, because business owners tend to build in a populated area that increases their access to materials, major ports of commerce, and trained professionals to run their operation. However, as these businesses become

successful, they attract immigrants from the countryside, who compete for location and work in the city.

Immigration from the countryside to the cities is a documented problem, because as more people move into a confined area, the more thinly the local resources are spread. This becomes a cycle in Malthusian dynamics, which in the case of traffic leads to anger, stress, hatred, and eventually road rage.

Urban sprawl is a secondary effect associated with traffic. Again, the distance that people live from a population center directly correlates to their commute-time – nobody wants to drive for 6 hours to and from work, so as the population density and traffic congestion surpass reasonable levels in the city, the city begins to expand outward.

Over time, urban sprawl seems to slow the increasing rate of congestion within the city, but does not reduce it – also, when road crews add additional roads & infrastructure to handle the extra city traffic, the level of congestion will again rise to a new, stable level which once again exceeds the threshold for a given urban area.

Thus, we have millions of people all over the world piling into confined areas, each of them attempting to use common roads to live a richer lifestyle as a result of the higher pay from successful urban businesses. The basis for traffic congestion relates to the transit-time allowed by automobiles, which are themselves limited by range, fuel-economy, speed, and existing roadways.

Further, as time moves forward, the traffic congestion spreads through urban sprawl to locations previously unaffected by traffic congestion. It is a problem based on the limits of outmoded 20th century technology, and if left unchecked will not only mire our countryside in traffic, but destroy our local environment as well.

Commercial Antigravity

Meg Coyle and her TV crew got the footage that they wanted – but the end result was a 30-second news bulletin featuring my Lifter footage inter-spliced with scenes from the newly released “Star Wars: Episode II”. The quote that I’d made about solving the issues with traffic congestion made it into the spot as an audio voiceover to one of the Star Wars scenes, and despite the poorly-done presentation by King 5 News, the result of the TV-spot was hundreds of encouraging emails telling me how favorable my Seattle-area neighbors received the idea of overcoming traffic.

One of the results of this publicity was that it prompted me to begin writing “Commercial Antigravity” – an article that began to make a business-case for introducing Antigravity technology in the commercial marketplace and later led

to a collaborative effort between myself and a California startup company called “Personal Flight Systems”.

Personal Flight Systems, or PFS, was founded by Scott Redmond – a dot-com expatriate who’d done well financially in the Silicon Valley tech boom during the 1990’s, before encountering the same hard times as the rest of us after the crash in 2001. He’d gone through the same annoyances that I had with traffic, and had come to many of the same conclusion: one of the biggest obstacles to the introduction of Antigravity in the commercial marketplace was in creating a market for it, since most businesses could not find an immediate application to justify investing in it.

“Commercial Antigravity” suggested that instead of pursuing space, the best place for Antigravity to take root is actually right here on Earth – as a median-technology between air-transportation and the automobile. The principle that it laid out was that the best use for emerging Antigravity technologies was to supplement point-to-point “short hop” transportation, which is a market currently only served by helicopter technology.



Moller Skycar: A real-life VTOL commuter sky car, but it’s far too noisy to fly in the city!

Helicopters have drawbacks, though – a big one is the noise that they make, which renders them unsuitable for low-altitude flights in residential areas. Another drawback is that they’re dangerous – they’re most difficult vehicle on Earth to pilot, and they also require a large area devoid of obstacles to take off or land.

What this means is that even if you’re rich, like Bill Gates, owning a helicopter isn’t going to replace your automobile. In fact, in addition to still having to drive most of the time, owning a helicopter not only adds a tremendous expense in terms of paying for vehicle maintenance, a full-time or charter pilot, and fuel, but it also requires you to ensure that there is a helipad at your destination. Again, in the case of Bill Gates it would mean carrying the financial burden of putting helipads at every Microsoft location that he might want to visit, as well as disrupting his employees as he lands or takes off at each location.

The strange thing about Antigravity technology is that despite the inherent flexibility that it has in comparison to conventional aerospace & transportation technologies, for some reason it’s far enough removed from everyday life that very few people are able to think about it as a serious force in the future economy.

I began to realize this soon after doing my initial appearance on Television, as a great number of the business contacts that I began to meet had literally no idea

where they could apply Antigravity in their business. The same case was even more true for IT-industry workers, who despite priding themselves on being technophiles, often tend to have little regard for anything not directly relating to computers. I found that despite living in an area full of incredible, wealthy, educated people, I was having no luck conveying the business goals underpinning Antigravity technology to anyone I met. At least, not until I met Scott Redmond...

The PFS Year: 2003

Scott Redmond initially approached me in 2003 looking for somebody who could assist him with the development of an Antigravity technology based on a loose-interpretation of the Biefeld-Brown Effect. His post dot-com era business plan was to create a few micro-startup corporations to develop technologies that he believed would be the next “big thing”, and based on the popularity of Lifter technology in the press; he’d guessed that he could finally put his own research into a marketable form.

Other than Jean-Louis Naudin in France, I hadn’t met many people who’d done more work than I had in constructing these devices who had any interest in partnering in an Antigravity company. Also, Redmond seemed keen on actually hiring somebody for the role, which meant that I’d be able to quit my daily commute across the I-520 Bridge and finally focus on these technologies full-time.

At first, I’d been a bit hesitant to open up with the majority of the research that I’d done in this area to Redmond – after all, I’d never even met the fellow in real life: he was a reassuring voice on the phone, and not much more than that. However, the daily pressures of commuting to Seattle finally caught up with me, and I began to describe in greater detail my plans for commercializing Antigravity.



Lifter 4: A small test-bed for larger AG technologies.

Ordinarily, when I open up to a business associate about Antigravity, there’s usually either a stunned silence or a lame attempt by the colleague at some type of witty or intelligent comeback. This is because it’s a new and emerging technology, but also because there’s a bit of social stigma attached – kind of like telling a friend that you’re building a full-scale model of the USS Enterprise in your backyard.

In talking to Scott Redmond, however, I found someone who could put a real, practical spin on the technological ideas that I was talking about to help turn them into a real business model for a new type of transportation. For instance, I’d asked him early on about what a commercial model for a lightweight replacement for the helicopter might be – I’d been visualizing elegant streamlined shape of the Moller skycar, and was surprised that his reply was more intelligent than

anything I'd come up with: "It's simple," he said, "Whatever we build, it has to fit into a 4 by 8 foot square, because that's the size of a normal parking space."

Over the course of late 2003, Redmond and I began hashing out a design for a real, workable Antigravity device that would serve as a replacement for first helicopters, and later for automobiles. For the first time ever, we began really looking at the dynamics of modern transportation – such as the materials that it should be constructed from, as well as the control systems and emergency-backups that would need to be in place to ensure that our finished product would be inexpensive, safe, and convenient.

Our final prototype design wasn't a true Antigravity device – instead, we'd settled on some advanced Magneto Aero/Hydro Dynamic (MAD/MHD) concepts that emerged from UV pre-ionization experiments that I'd found working with Lifters.

One of our first realizations was that we'd have to shelve some of the more esoteric concepts such as the Searl Effect Generator to find a propulsion system that not only worked, but could also be engineered into an integrated flight-system. This was a sticking point at first, as being able to invest in technologies like the SEG may not pay dividends up front, but provide a much greater return later in the development cycle.



MHD-Drive: No moving parts and high-efficiency from UV Pre-Ionization make it a practical solution for commuter transport!

Once we'd agreed that a hybrid MAD/MHD system was our target goal, we were surprisingly able to make incredible progress in enhancing the technology with remarkably little investment. I'd found that despite critical accusations about Lifters being "only ion-wind" from the scientific community, and ion-wind device could be made even more fuel-efficient than an aircraft if the high-voltage air gap was ionized using ultraviolet-light, which allowed a much greater conduction at much lower voltages. Simply put, we found that ion-wind could easily do what we needed, but that the cost to develop the correct system was still more than either of us had.

I'd realized the importance of what we were doing at PFS early on, which prompted me to ask for a permanent position in the company. There's nothing worse than doing contract work, because it becomes a real statement about exactly how expendable you really are: even the best contractor is never the same as being an employee.

Thus, after a bit of grumbling Scott Redmond agreed to bring me onboard as the “Director of Research and Development”, and in return I’d agreed to forgo the consulting fees that I would have otherwise felt justified in charging. Both Scott and I were IT-industry expatriates, and a permanent position giving up my exorbitant consulting-rate worked much more in his favor than in mine.

Over time, Scott Redmond brought in a lot more technology to the project – as it turns out, he had some very interesting MHD technologies of his own. Some of these were in-house experiments by PFS, and others were actually Soviet-era Russian research that Redmond had purchased the rights to use. We also brought in another person with more than enough knowledge on MHD and Ion-Wind devices: the famous inventor and engineer, James Cox.

Cox had agreed to let us use his proprietary “Cox Dipole Thruster” technology on the PFS project. This is something that I built a small-replication of to test, and it did in fact appear to move air as he’d predicted. The Dipole Thruster works in a similar manner to a normal MAD/MHD drive -- a current passed through the air is pushed through the engine by a magnetic field positioned at right angles to both fields.

MAD/MHD technology of various types has been tested all over the world, and even been successfully implemented in seagoing vessels as part of a mid-1990’s Japanese research effort. However, the Cox Dipole Thruster was unique in that instead of using a high-current DC ion-flow being pushed by a high-current DC magnetic field, Cox had developed a method of doing the creating the same volume of airflow using phase-coupled AC fields. In short, instead of actually pushing electricity through the air, the Dipole Thruster instead merely polarizes the air-molecules very rapidly in either direction: a phase-locked magnetic field then moves them as if there was an actual current flowing, but with much less energy expended in the process.

Between the contributions of Redmond, myself, and Cox, we’d solved all of the theoretical issues required before proceeding to build a prototype – with only one exception: how to power the craft. Redmond had been pushing for a fuel-cell based system, which he saw as being the future of transportation. Additionally, he owned a stake in a small fuel-cell company in California, and saw it as a cross-marketing opportunity.

Cox and I didn’t agree with the idea of using fuel-cells. It’s best to showcase only a single breakthrough technology in a new prototype, mostly to reduce the burden of troubleshooting the technical errors that come up in the construction process. Using fuel cells would have been far too heavy, and would have added an unknown factor to our design that we could potentially kill the entire project. We needed something lightweight that we could predict the electrical output from.

The answer to this came from an unlikely source – Bob Lazar, whose claim to fame from 1989 was supposedly working on UFO’s at Area 51. I’d originally

contacted Lazar simply because I could, but I rapidly realized that he's a very capable inventor. In fact, Lazar was sharp enough that I started to believe the story about Area 51 – if I'd been Edward Teller, I would have hired him to analyze my crashed alien flying-saucer, even if I knew that he didn't have the PhD that the press tried so hard to confirm.

In any case, Lazar had a deep familiarity with jet- and helicopter-turbines from past days of racing jet-cars in the 1980's. He literally installed these into a modified Honda CRX, and raced on deserted roads in Nevada against other local enthusiasts. His advice to me was to find a used helicopter-turbine, connect it directly to a turbo-electric generator, and then use a high-amperage conversion system to step up the electrical output to power our ion-wind apparatus.

Our effort to design the world's first commercial Antigravity craft culminated in a single profound event in late 2003 – a funding presentation for the US Naval Research Lab to demonstrate what we'd accomplished, and describe how we would put their money to use to build a commercially-available system for 3-dimensional personal transportation in the 21st century.

Our “presentation” actually ended up being a 20-minute film segment that I shot of myself demonstrating a 4-foot Lifter in my garage. I'd blocked off the walls with backdrops, and shot the demonstration of myself operating the Lifter, while talking about how to make it more efficient for large-scale propulsion. Redmond took my footage, added some clips of his own proprietary research, and flew to Washington DC, where he gave a lengthy presentation to the Navy.

Both Redmond and myself came away from our respective parts of the presentation with the feeling that we'd put together a slam-bang selling tool for getting our point across – however, within weeks the news came back that the Navy simply didn't have the resources to fund this type of research, which left us without any cash flow. I followed up over the next few weeks with a demonstration for a local investor representing several wealthy people in the Seattle area, and Redmond referred a few California investors to me with additional questions, but we didn't find the capital that we were looking for, and the Personal Flight Systems project faded over the next few weeks into oblivion.

Back to the Basics

After the dramatic conclusion of the PFS endeavor, I decided to invest more resources into searching for “true” Antigravity. One of my suspicions had been that despite the breakthroughs we'd made with regard to MAD/MHD propulsion, we had been working in such a heavily-saturated area of science that anything we did fell into the category of “old news”. After all, the Naval Research Lab had funded Ion-Wind technologies in the 1960's, as well as the US Army and US Air Force in the same era. They'd come to us looking for something new, and had left with the impression that we were selling them old technology.

Also, despite the excitement about working with PFS towards the realization of a technology whose time had finally come, I'd still wondered if there weren't bigger fish in the sea than simply MHD. For all of the positive work that we'd done, it was still a technology that was highly-dependent on the local environment – and from my experience demonstrating Lifters for television crews, slight changes in humidity, air-pressure, and other factors can create a lot of trouble for electrical devices functioning in an open-air environment.

In my view, the Navy had a point -- MAD/MHD systems are open for a great deal of improvement, but subject to a variety of known limitations. In their quest to find new and innovative technologies for implementation in military applications, it's likely that MHD drives simply aren't compelling enough in a present-day context to warrant funding.

On a more political note, the NRL presentation that we did with Personal Flight Systems is also a representative example of why Antigravity isn't currently a commercial project – the conservative mentality that's dominated big-science and big-government for decades is willing to take a small risk like a robot-controlled aircraft crashing, but remains consistently unwilling to justify big risks like an Antigravity or MHD prototype never getting off the ground.

That may seem like an unfair criticism of the government, but the reality of our current political environment is that every 4 years these organizations need to justify their projects to a new political administration, and nobody wants to be seen as “wasting money” on pie-in-the-sky ideas.

Even in the cases where these technologies have been funded, the funding is usually short-lived, and the results are rarely publicized after the project is over. The 1950's-era funding of Alexander DeSeversky's research by the US Army was similar in many respects to the 1960's-era research that TT Brown did under funding from the US Air Force. Again, the Army returned to the idea in the 1980's, and since that time all of these military branches have at least revisited MAD/MHD concepts at one point or another.

In each case where the government or a large corporate sponsor is involved, the project usually receives enough funding for a stage-1 proof of concept device, after which the funding is normally withdrawn. This is probably because a first-stage prototype for these technologies shows more flaws than it does potential, but that's an inherent part of any new technology. Keep in mind that the old Commodore 64 was really necessary to build the market for the launch of much higher-power PC's later on.

Open-Source

The big news for 2005 is a transition at American Antigravity: I'm taking the website from being a one-man marketing effort to build awareness of Antigravity, and turning it into a non-profit corporation. The American Antigravity website has served millions upon millions of visitors – and millions more have seen me on television or heard me on the radio talking about the benefits of Antigravity technology.

The quest for “True Antigravity” has begun to yield impressive results, but what's consistently been lacking has been a business-model for connecting the inventors doing this wonderful research with the funds to move forward in their work. By taking a non-profit approach to fundraising, we'll be able to use risk-free donations from the public and corporate sponsors to not only increase news coverage for these technologies, but also fund the key experiments to really lay down a basis for which of these technologies should be focused on for commercialization.

My expectation is that American Antigravity will succeed where numerous past efforts have failed, mostly because it's an effort that involves the public. Community support is behind the work that we're doing, and we hope to enlist corporate sponsors to assist with funding some of our larger endeavors in upcoming years.

The motivation for public support should be immediately apparent: American Antigravity offers a unique perspective on key Antigravity technologies, and isn't fiscally bound to the outcome of any one particular technology. Thus, unlike past efforts that were promoted to push a specific invention or technology, we're able to now look at a collection of technologies and finance them inline with public expectations and desires.

American Antigravity's goal isn't to push the PR image that Searl, Hamel, or any one particular inventor is selling – nor is our goal to buy up these key technologies, which is a risky activity that often ends up destroying the intellectual property in the process. We're hoping to foster creative innovation, and build a broad base of public support predicated on only one belief: that Antigravity is an achievable reality, and that it will improve our society in the process.

Apparently I'm not the only person with this emergent new ideology about how to develop projects in full public view – in fact, the final push that encouraged me to pursue the non-profit approach came from a collection of hundreds of scientists, inventors, and engineers coming forward to share their hopes and dreams for these technologies.

Roads in the Sky

While the government hasn't supported Antigravity research in the context of past military applications, it's likely that a broad-based community effort to develop these technologies will meet with eventual support. Why's that? The answer is simple: Antigravity technology will save the public millions of dollars as it begins to gradually replace existing transportation technology.

From a financial perspective, why don't we look at what implementing Antigravity technology will replace: from my own experience sitting in Seattle traffic, one of the major annoyance factors was always being stuck behind the tall, narrow white cargo trucks that seem to be ubiquitous to the area. These trucks are popular with businesses because they fit effectively through Seattle's narrow streets, but unpopular with drivers because they block the visibility of street lights to cars traveling behind them. On average, these trucks are 8 to 10 feet tall – which makes them unstable if fully loaded, and inspires just a bit more paranoia to other drivers in close proximity.

I made a compelling case for how Antigravity will improve the efficiency of society by saving money a few months ago in an email to Paul Murad. I actually wouldn't have thought to include the following discussion on cost-benefit analysis, except that he insisted that it makes a big impact:



SkyCars: Computer-driven skycars solve congestion with high-speed airborne transportation: AG makes engines disappear.

Your average panel truck delivers goods and services all over the Seattle area – these trucks typically travel in a 50-mile radius around Seattle, and assuming that the drivers fully stock their loads in the morning, I'm guessing that they can complete their loading without having to return to the loading dock until 5pm.

Assuming that each panel truck has 2 drivers to assist each other with unloading the merchandise, we can assume that they probably spend 1 hour of the day loading, another hour spread out over the day unloading, and the remaining 6 hours simply fighting metro-area traffic to reach their various destinations. This is excluding lunch, which we'll assume they eat while sucking in exhaust fumes on the 520-Bridge.

On average, your panel-truck driver probably makes \$30,000 per year – for two of them, that's \$60k annually to deliver goods and services. Now, if the Seattle metro area was completely free of traffic, we could assume that they could begin their trip in Seattle and cross the 520-bridge in about 15 minutes. Again, in normal Seattle traffic, the same trip might take two hours. Let's be conservative,

and guess that including stopping for street-lights, pedestrians, and traffic jams, each of their deliveries takes about 4 times as long as it otherwise would.

Since these two truck-drivers spend fully $\frac{1}{4}$ of their job driving, we're paying them \$45,000 per year to drive around town and basically sit in traffic. At 4 times the actual driving time due to traffic losses, that means that we're actually paying \$11,250 to these drivers to deliver goods, and \$33,750 for them to sit in traffic.

The actual number of delivery drivers varies inline with the size and service area of each business, but let's assume that each company has 10 trucks that it maintains as part of a delivery-fleet. This means that the total losses for that business amount of \$330,750 per year, simply to account for traffic. It also means that without traffic, the business could employ fewer drivers and trucks to achieve the same delivery goals, which means that wear and tear on the roads would be less.

In a business sense, traffic begets traffic – in order to maintain coverage for deliveries in an area with high-traffic congestion, any business must in effect maintain a much larger overall fleet to account for the losses and delays associated with the traffic itself. Having a larger fleet on the road means more trucks, more pollution, and more traffic – and since these delivery trucks are neither as rapid nor maneuverable as an automobile, they add far more than just another car on the road would to congestion and pollution.

When I use the example of panel trucks, it may bring to mind some Nuevo-riche yuppie furniture-store on the Eastside catering to a small group of clients who don't mind waiting for their deliveries – you see, in addition the money lost, each delivery itself is subject to variable same-day delays as a result of this traffic.

There's more on the Eastside than just specialty shops, though – ambulances, fire-engines, police-vehicles, telephone crews, and the city bus system all use our roadways to make multiple deliveries within the Seattle metro-area.

In the case of something like an ambulance, you'd see a higher-fatality rate in the city because of traffic related congestion: there have been many occasions on the 520-bridge that I've seen traffic edge over onto a 2-foot median so that a fully-loaded ambulance can scrape by. Also, since many of these injured victims are injured on the freeway itself, there can be a $\frac{1}{2}$ hour delay for the ambulance to snake through sometimes 10-miles of traffic-jams to reach the scene of an accident – followed by another period of delays to transport the victim back to the hospital.

In the case of police vehicles, traffic-related congestion means that patrol cars are assigned to a smaller overall patrol-area, so that they can respond within the appropriate timeframe to important events. Unlike an ambulance, which suffers obviously and immediately from traffic delays, you are more likely to see the

overall cost of police vehicles increase as departments add more of them to cover ever decreasing patrol areas.

In another example, you have a double-impact for a service like a telephone or utility repair crew. Traffic congestion means that not only is the consumer's monthly bill inflated to cover the cost of employing a larger staff to cover the same service area, but it also means that since repairs take longer due to traffic delays the affected customers suffer additional lost revenue as a result of the outage.

Using our local Comcast cable company as an example: several of the local hubs for television and internet transmission between the company and the customer are located at the equivalent of a "central office" – unmanned facilities housing transmission equipment that are only accessed by an on-call staff if a repair or adjustment needs to be made. These central-office facilities may affect thousands of regional customers, which means that when a repair is delayed because a technician is stuck in traffic, the number of customer-support calls elevates dramatically. Hence, Comcast is forced to suffer a loss in revenue by crediting the customers for additional lost service time, and suffers an additional loss through the need to hire additional staff to handle the increased customer-service call volume.

Traffic is a Friction Effect

From an engineering perspective, traffic congestion has a simple explanation: it's a friction effect, and can be calculated as a net-loss of total performance. Instead of losing energy, you lose the business-equivalent, which is money. Thermodynamic principles govern energy loss, and state that once the friction has stolen away the energy, it dissipates into entropy-- in a financial sense it means that when a business slowly bleeds revenue due to traffic congestion, that money can't be made up in any way. It's gone forever...

In a perceptual sense, losses to friction are often ignored because the lost energy (or revenue) is a piecemeal expense – again being a component of other activities, and often ignored. Financial accountants always calculate for time-based piecemeal losses – these are called depreciation, and apply to a reduction in the value of a piece of equipment as it degrades in effectiveness over time. However, I've never seen accounting figures to deal with the frictional effects of traffic congestion in the same manner – probably because traffic is a dynamic loss related to a service (driving), instead of a visible degradation to a mechanical piece of equipment (depreciation).

As a final example, I bought a very nice Gold's Gym Universal Gym on E-Bay about 3 months ago – it took a while to assemble, but I've been using it successfully for over 2 months now. I used a very light lubricating oil on the bearings that the cables ride on when I first assembled it, and made a reminder to myself to find a more viscous oil that wouldn't degrade over time: as you've

guessed, I've been busy enough that I forgot to re-oil the bearings, but didn't notice any negative effects for quite a while.

Lightweight oil such as 3-In-One oil does a great job of freeing rusted parts, and a decent job of soaking in through older bearing seals to lubricate the internal components. The price that you pay for highly-penetrating oil is that it evaporates off rather quickly, though, and in the case of the weight-set it apparently didn't stay in the bearings very long.

The long and the short of the story is that after lifting weights for 2 months, I hadn't made any gains in my strength – in fact, every day I used the machine I felt a bit weaker than I had the previous day – until I took it apart 2 days ago and oiled the bearings. My workout today showed a 20 pound increase in weight, which is about a 10% improvement in my total strength and stamina after only 2 months. Why am I telling you this story? It illustrates the insidious effects of friction, and how they creep up slowly enough in complex systems that you become willing to look at every other factor before realizing that its all friction related.

What is the total cost to the Seattle metropolitan area from traffic congestion? It's nearly impossible to gauge, but even in terms of simple time-lost from sitting in traffic, it adds up very rapidly. There's another aspect to traffic that's also pretty damaging, which I'll now address: how it changes the value of existing resources.

Traffic Effects in Housing Costs

The Seattle area is beginning to show symptoms of a real-estate crisis that has affected both New York and San Francisco for decades: it's becoming too expensive to live there. If you've thought that it's because of competition for housing, you're partly right – the competition is caused by traffic.

Once again, during my AT&T days, I had the opportunity to meet a variety of people from different backgrounds. One of the interesting realizations that I made was that housing costs are so much higher in the local area that several of my coworkers opted to live farther away from the office to avoid the higher prices. This is a reverse scenario to my own situation: Danielle and I paid more money for a house geographically closer to work, because we value our time enough to not want it wasted driving down a road.

Many people in the Seattle metro-area don't share our views, however – they don't ever take a cost accounting for the value of their time, which means that they are more apt to spend less money to buy nicer property in a location more remote from their office in the city. This applies as a voluntary decision to high-paid tech workers who'd prefer to live in a palatial estate and commute for 2 hours a day into the city – and it's an involuntary decision for lower paid service-sector workers who simply can't afford to live near their workplace.

Here's an overview of the housing problem caused by traffic. First, let's assume that there are a limited number of residences in the immediate vicinity of the various business-centers in the Seattle area. A perfect example would be houses near Microsoft, which were originally middle-class residences, and now often sell for over a million dollars each.

It starts with the property developer: the cost of land is higher in the city, because it's a more desirable location. Thus, the property developer buys the land at the high-cost and subdivides it into smaller pieces than they ordinarily would to offset the dramatically higher base-price. This isn't theory – land sizes for new houses in Woodinville (20 minutes from Microsoft) and Redmond itself have nosed-dived from an average ½ acre parcel in 1980 to a measly ¼ acre parcel in 2000.

Danielle and I actually looked at a \$300,000 house that was positioned so close to the edge of the property that the back door could not fully open without hitting the back fence. The lawn wasn't big either – you know those square sheets of grass that nurseries grow to fill in a bad patch in your lawn? The entire yard was composed of 4 of those, which hadn't yet grown together because the house was brand new.



Housing: Driving-time can make houses cost triple the price in Seattle.

So from day one in most new houses, you end up at the very least paying more money for the same amount of house – except that the value of a new house is partially determined by the value of surrounding property, which becomes highly overvalued due to proximity to local workplaces.

Thus, the people who win buy houses in a market before it starts to inflate, because they can sell the house after 20 or 30 years for 3 to 5 times its original value. In Kirkland this is absolutely the case – houses that were built in 1980 for \$100,000 are now worth nearly \$300,000. However, they only win if they eventually sell the house...which retired and elderly people often have to do because they can't meet the cost of rising property taxes.

If you hold onto a house for the requisite 20 or 30 years for the value to increase, it probably means that you're reaching retirement age – not the best age to deal with taxes on a \$300,000 house that you bought for \$100,000 several years ago. Taxes increase because of housing value, which increases because of proximity to work.

As everyone knows, housing costs have a secondary effect on employers: to build up a staff in a metropolitan area, employers must take into account higher property values and pay their employees higher salaries. Alternatively, in an environment like Boeing where the union-wage determines the salary and not the employer, it means that the financial loss from higher property values falls

directly on the employee, at least in comparison to their coworkers in plants at more rural locations.

Traffic congestion functions exactly in the same economic manner that friction does in a machine – it imparts a net percentile loss on the entire system, which means that the entire system must be run harder to produce the same amount of output.

There's another comparison as well: when friction slows your machine down below its normal output, your natural reaction is to push the machine harder to make up for the lost results....and this is how accidents happen. Not oiling the weight set means pushing harder on the weights to lift the same amount – in my case, oiling the bearings happened after I snapped a cable as a result.

Accidents in the Sky?

When I talk to people about how Antigravity can gradually eliminate traffic congestion and all of the problems that congestion creates, someone invariably asks me about traffic in the sky. It's a fair question, and one of the first dilemmas that we had to resolve during the Personal Flight Systems project.

The concern about traffic accidents in the sky arises from a couple of basic misconceptions: first, that Antigravity vehicles will somehow fly in big lines through the air in the same way that traffic snakes along roads on the ground, and second, that human beings will be flying the Antigravity craft.

To address the first misconception, it should be said that the best way to divide up air-traffic at low altitudes flying in different directions is to divide the traffic by altitude and direction, and not by creating "roads in the sky" of vehicles flying at the same height. One of the defining advantages to 3-dimensional transport is the ability to stack traffic flying in different directions by height, so why fight nature by forcing it into a flying variant of the road systems that function so poorly today?

Aircraft and helicopter traffic already flies with great regularity around Seattle, so in the case of Antigravity craft the best option is to set a specific group of altitudes aside for new and emerging Antigravity craft. This way, a King-5 news helicopter being manually piloted to watch traffic congestion on the I-520 bridge can dart and loop all that it needs to in order to maintain coverage of unfolding accidents or congestion. However, it would be precluded from these actions either above or below a certain height, which would then be used only for Antigravity traffic.

Antigravity vehicles themselves would require altimeter-regulated systems to maintain the correct height for a specific flight path. Heading north to Bellingham? Please change your altitude to 400 feet proceed to the following GPS coordinate. Heading south to Olympia? Please change your altitude to 300 feet

and proceed to the following GPS coordinate? How about parking at the Seattle Center for a day of shopping or dinner at the Space-Needle? Please descend into a slow-speed parking altitude and land when the following GPS coordinate has been reached.

Keep in mind that one of the primary causes of traffic congestion is the slow-speed of surface vehicles: any vehicle traveling between two points requires a certain amount of time on the road, which means that it takes up a limited resource in space for a longer period of time. One of the defining characteristics for Antigravity vehicles will be the speed at which they travel – instead of 20 to 40 miles per hour, with stoplights at every block; they'll be traveling at 200 to 300 miles per hour, in a straight-line between the flight's origin and destination.

Higher flight-speeds mean that Antigravity vehicles will spend less time in transit than automobiles do, which further means that even if traffic was a problem in the first place, the use of high-speed 3-dimensional transport would eliminate it.

Now to resolve the second misconception about Antigravity vehicles: people causing accidents while joyriding. This won't happen, as Antigravity vehicles will be computer-flown. In fact, one of the challenges that we resolved at PFS was in finding a way to give a person a 2-week training course to fly an Antigravity vehicle, and yet let them loose to fly proficiently after that.

Antigravity Auto-Pilot

Most pilots have years of flight training before the FAA will let them in the cockpit of an aircraft, and the reason became clear on September 11th – even if malicious intent isn't behind the accident, having aircraft slam into buildings is a risk that must be avoided at all costs. However, the FAA is a progressive organization, and realized that the need does exist for a rapid, high-speed 'personal flight system'. Thus, they created the LCAS system – the Light Aircraft Control System composed of radio-beacons over major metropolitan areas that small aircraft currently use to determine their position and heading.

LCAS wasn't invented before GPS, but it was invented before GPS was the known value that it is today – nowadays, given access to the GPS satellite signal you can fly an aircraft blindfolded, and if you live in the metro area you can use the FAA's LCAS system to accomplish the same feat. However, the FAA didn't put these beacons in place to assist blindfolded pilots – the intent of the system from day one incorporated the vision of the LCAS system someday being used by computer-driven aircraft to takeoff, land, change-heading, and perform all of the functions that maps & compasses used to assist with, in a nice tidy package.

For some people, the concept of a computer-driven Antigravity craft may seem to take the fun out of Antigravity: however, the goal is efficient transportation based on individual convenience. It's possible that custom Antigravity devices may find

a role in modern-day barnstorming activities, but it'll probably take a 2 hour flight from Seattle to Nevada for gimmicks like that.

The FAA has also agreed to reduce the pilot training program to “emergency maneuvers only” only on the basis that a computer controls every aspect of flight. This means that legally, even if you want to take the stick and perform a few stunts, you won't be able to unless you're in an emergency circumstance, or you alternatively spend 2 years in flight school working on a pilot's license.

However, for the majority of us who don't have 2 years to invest in flight-school, putting a computer at the helm of your Antigravity vehicle should be a positive and rewarding experience: it means the end of traffic jams, sitting on slab of concrete with your transmission in park and your hand sitting idly at the wheel of your automobile.

Computer-piloted Antigravity vehicles can be piloted even with contemporary computer technology – navigation through 3-dimensional space with the assistance of LCAS beacons and a GPS signal isn't nearly as difficult as the desert-navigation that DARPA funded as part of a robot off-road race last year. Modern computers can barely stay between the white and yellow line on contemporary surface roads, and yet autopilot systems are trusted to fly aircraft all over the United States. Even a modern PC has more than enough horsepower to navigate an Antigravity craft, which means that all of the components to unveil this new transportation exist today, with the exception of a commercial propulsion system.

Asleep at the Wheel & Drunk-Driving

I mentioned bodies laid out along the white line on the edge of Interstate-5 earlier – it was right after the part about “things that you shouldn't have to see in America”. This dovetails into the section about computer-controlled flight systems for Antigravity craft, however, because the grim reality of traffic accidents is that they're caused by people making bad decisions.

America desperately clings to a strange double-standard about drunk-driving-- as a society, we realize that drunk-drivers kill thousands of innocent citizens across this country every year. However, we also support thousands of bars and restaurants that sell alcoholic beverages intended for consumption on the premises, and then leave it to the individual's judgment about whether or not they're too drunk to drive.

This isn't a criticism of drunk-driving laws, which are intended to stop intoxicated drivers before they kill people. It's simply pointing out a basic fact: alcohol by definition impairs judgment, and yet we expect people



Accidents: DWI & Fatigue won't matter if a computer is flying your vehicle.

with that impaired judgment to be able to judge whether they're impaired.

Ok, so maybe drunk-driving is part of the problem, but what are some other causes for traffic fatalities? One gigantic cause of accidents that's gone undiagnosed until just recently is simply fatigue. Americans live busy lifestyles, and many do shift work that's at odds with their normal biorhythms. I've done graveyard shift work, and there's nothing more dangerous than driving home with bleary eyes amidst a hoard of oncoming traffic in opposite direction struggling to drink coffee while they drive. Fatigue-related accidents go largely undocumented, but probably add up to far more damage than drunk driving – after all, not everybody drinks, but everybody does get tired. The police don't have a breathalyzer for fatigue, which means that the accidents that it causes are usually attributed to other factors.

Drunk-driving and fatigue account for a lot of the accidents on America's roads – some of the other causes include speeding and slow-reflexes in an emergency situation. In fact, there are very few accidents that aren't driver-caused in some way – perhaps a boulder falling from a cliff onto a moving car would be a rare exception.

Another problem with a 2-dimensional road system is that when an accident does happen, there's nowhere to go. In driving school, they instruct students to pull to the right shoulder of the road if they begin to have trouble with their vehicle: this won't work in Bellevue, where roadwork has used the old shoulder space in the right lane to handle additional traffic, leaving a 1-foot shoulder abutting a solid concrete wall. In fact, roadwork on the aging transportation arterials is so pervasive that there are a number of areas that have no space for a driver in trouble to pull off, meaning that a lane of traffic is blocked for stalls, creating further traffic problems.

In the case of an actual accident, three or four lanes of the already packed 5 lane freeway can be closed – in the case of the bodybags, there's literally nobody to move the damaged vehicle. Traffic sits at a standstill while the burning wreckage waits for a police-cruiser to crawl through traffic and use the push-bar to move the vehicle to the shoulder of the road.

AutoPilot & Insurance

Why is insurance so expensive? Perhaps the answer is that when a wreck occurs, it often involves two or more vehicles, which means that a lawsuit for damages ensues. Once blame has been established, the insurance company for the responsible party must then pay compensation for damages to both vehicles, as well as cover the legal costs of going to court and any ensuing medical liability.

Automobile insurance is mandatory in Washington State, and in the Seattle area it costs considerably more than in the rest of the state. Why? – because its been

fiscally demonstrated that Seattle has a higher per-capita rate of automobile accidents (because of traffic), so the insurance companies offset the increased cost by raising rates for the metro area.

Not only will the computer-piloting systems in Antigravity vehicles increase transit speed, reduce accidents, and nearly eliminate drunk-driving and fatigue-related accidents, they will also greatly lower the cost of insurance for the average commuter, who won't be literally paying for the bad choices made by other drivers.

Transit Time and Housing Costs

As it turns out, by purchasing a high-speed Antigravity vehicle you may not be subject to the higher costs of metro-area insurance, because you won't have to live in the Seattle area. After all, if you're already used to a ½ hour commute, letting a computer do the job and fly you to the office will be payoff enough – you can still take the ½ hour commute to move to a location a bit further away than you'd otherwise consider buying – like maybe Central Washington. Why not? Land is cheap, the view from the Columbia River Gorge is spectacular, and the commute to downtown Seattle isn't too bad. East isn't the only way to go, though – you could alternatively have a nice view home anywhere within a 100 miles of Seattle, and since the flight speed average of 200 mph will get you downtown in ½ an hour, you'll have extended the buying power of your dollar for the best real-estate you could hope to get.

High-speed Antigravity transport will be beneficial for people who want to live in the city as well – because they won't have to deal with rush-hour traffic clogging up the streets, nor will they have to live near neighbors who bought a house in the city simply to avoid a long commute. The number of actual residents in the city will drop as accessibility to the surrounding rural areas increases, which will benefit both the city by relieving population density pressures, as well as the rural areas by bringing in high-income families build up the rural communities.

Setting the Stage for Road Rage

How bad does traffic congestion need to be in order to inspire road-rage? It's a question that obviously depends in part on individual mindset and psychology, but not entirely – road rage doesn't just affect the “gun toting gang-members” that the media usually portrays. In fact, a well documented case in the Southern United States involved two married, middle-age mothers – a confrontation on the road that led to one of them drawing a pistol that her husband had given her for safety and shooting the other.

There are examples from psychology that give us some clues as to what's happening – the first from Malthusian dynamics, and the other involving a mammal's response to chronic stress.

Thomas Malthus was an 18th-century British political economist most well known for writing “Essay on the Principle of Population” – at the time, it was a compelling treatise on population-related problems in industrial England, and is one of the earliest examples focusing on the effects of population density.

One of the experiments that Malthus conducted was to place common rats in a confined area, but still provide them with the necessary resources for life: food and water. He gradually decreased the area in which they lived, which forced the rat colony to live in closer proximity to each other, but they appeared to be unaffected at first by this trend. After all, to a rat, food and water are the real essentials – a small decrease in the size of their living quarters was no real hardship, or was it?

As he gradually decreased the amount of space that the rats had to share, he found that at a certain minimum amount of space, the rats personality changed remarkably: they became angry, confrontational, and a variety of deadly altercations occurred that only ceased once the amount of space per rat had decreased below the critical threshold.

What Malthus found was that while the rats didn't initially respond to a gradual decrease in space, once the threshold value had been reached they reacted violently to reach a new equilibrium, by destroying competitors fighting them for a scarce commodity.

Here's another example from nature – the well-known parable of a frog in a boiling pot of water. The story goes that if you place a perfectly healthy frog in a boiling pot of water on the stove, the frog will immediately jump out of the water. However, if you place the same frog in a lukewarm pot of water the gradually increase the heat of the water, the frog will boil to death without trying to escape.

For the critics out there who might rapidly point out the difference between frogs and humans, here's a better example: a study was conducted to determine the minimum amount of weight that can be added to a weight-lifter's load before the person would notice the additional amount. After a great deal of trial and error, it was found not to be a specific amount, but rather a percentage (3%) of the load that the weight-lifter already carried.

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In other words, if you blind-fold a weight-lifter holding a 100-pound load, he won't be able to tell the difference if you add another 3 pounds on the bar – but he will notice if you add 5 more. However, as any weight-lifter will tell you, even if they don't notice the increase in weight, there are still physical human limits of tolerance that cannot be exceeded. You could continue to gradually increase the

weight-lifters burden, but at some point he will be physically unable to lift more weight – at which point he will drop the entire bar quite dramatically.

A Threshold Effect

What's interesting about all three of the examples above is that they all have two things in common: first, a gradual increase over time that goes unnoticed by the subject of the study. Again, this can be time, weight, or any number of physical or psychological stressors...adding additional stress if often not noticed at all, especially if stress already exists.

Second, and more importantly, all of the examples in the previous section contain a threshold effect. This is a set limit, and it's not subject to variation, although the actual limit itself is obviously dependent on the experiment at hand. Once the threshold has been crossed, in all of the examples a bad result occurs: Malthus rats began to kill each other, the frog in the pot boils to death, and the weight-lifter collapses from exhaustion.

One the big questions becomes knowing where the threshold is – in the case of traffic congestion, we're obviously close enough to a major threshold that we see road rage occurring in several isolated cases. However, it's likely that we only see it occasionally for the time being because we've only crossed the threshold-level for a few of the many individuals out there.

Where's the real threshold for road rage set? If our knowledge of human psychology or physiology is any guide, the threshold for road rage is a bell-curve, and the isolated cases that we've seen to date are at the very tail end of the curve. This is why road-rage is more pervasive in California than it is in Seattle – since they've got a 20-year lead on us in traffic congestion; they've begun to move farther up the curve.



Road Rage: Tempers flare due to chronic stress and anxiety in commuters.

One of the separating values between mankind and other mammals is the idea of self-control – simply put, it's believed that we can either choose to let loose our rage at other drivers, or else contain it inside ourselves as responsible adults. While this may be true in some circumstances, Malthus example with the rats demonstrates a change in personality on a subconscious level.

The fact of the matter is that we are responsible adults – and every time we get cut off by another drive or stuck in a traffic jam, we do suppress our negative rage response. However, the example of the threshold effect suggests that at some point traffic congestion will surpass the common man's level of self-control.

Competition Gone Wrong

In addition to increasing population/traffic density and threshold effects that touch off road-rage, there's an additional factor – competition. The Seattle metro-area, like many others across the United States, is a highly-competitive area.

We compete with each other all the time for scarce resources, such as the shortest line in a grocery store, the job that we're competing for against hundreds of other applicants, or the scarcity of "Tickle-Me-Elmo" dolls that started fist-fights between parents in toy stores during the 1996 Christmas shopping-season.

Competition is a part of nearly aspect of American life – playing to win is something that's drilled into us at an early age, and reinforced on the soccer, baseball, and football fields across our country during our entire childhood. Over exuberant parents teach us this lesson with vigor: taking home a sports-trophy means a pizza-party after the game, but coming in second-place usually warrants a sharp-reprimand for "not trying hard enough". Competition is meant to be a friendly challenge, but it oftentimes spirals out of control.

Like millions of other loyal viewers, Danielle watches "The Apprentice" on television every Thursday night, where the show's motto is, "Winning isn't everything – it's the only thing". On last week's show, the difference between the winning and losing team was less than \$100, but the result was a trip to buy jewelry for the winner and a trip home in shame for the loser.

Drunk or sober, fatigued or not, millions of these same Americans hit the road every day to get to and from work, and they take these competitive values with them. What should be a short trip to work turns into frustration as we pack en masse into a slow-moving line, proceeding down a 5-lane highway at a near standstill pace. The frustration leads to competitive behavior – a jockeying of position to ensure that even if we aren't getting there faster, we're at least getting there faster than the people driving next to us. We call it "getting ahead", but the person next to us calls it "cheating" – the competition makes our poor driving behaviors seem acceptable, but infuriates us when we see others do the same.

Frustration leads to anger that's compounded by a feeling of helplessness as we're trapped in a slow-moving cascade of cars. We begin to hate the people around us, hate the road-system and most of all, hate the feeling of being trapped by circumstances beyond our control. Being stuck in traffic makes us feel like we're drowning, which escalates into a rage reaction of lashing out at even the slightest perceived provocation. That, my friends, is how road-rage begins...

The End of the Road

Politicians often suggest more city busses, light-rail transport, and in Seattle they've been pushing for a monorail to reduce traffic. These are solutions that focus on the symptoms of losing control of our roads, and not on the cause – the roads themselves.

There are inherent limits involved with surface transportation that put limits on the scalability of contemporary solutions – and clumsy, ineffective workarounds like simply adding more traffic lanes aren't the answer. City dwellers are painfully aware of the additional burden on commuters that the constant roadwork creates – adding new lanes to existing roads simply means more to maintain in the future, at a higher-cost to taxpayers.

Politicians suggest mass transit ideas because it comes across well in a sound byte – and because the scientific authorities that they consult haven't sold them a better option. This isn't because better options don't exist, but instead because decision makers and their advisors are mired in an outmoded 20th-century style of problem-solving based on massive-scale & incrementalism.



Monorail: A sound-byte solution based on an outmoded paradigm.

One of the hallmarks of 20th century thought was a movement towards large, centralized resources that could utilize economies of scale to serve the public – the concept was based on a simple extension of the idea that if a technology works on a small-scale, then increasing the size of the system will work effectively to handle larger scale problems.

The “bigger is better” approach to designing systems in the 20th century led us to airports that are now overcrowded, schools that are overfilled, IT-systems overburdened by excess users, and roadways packed to a traffic density unimaginable by our forefathers. The solution is not incremental expansion of existing systems – it lies with the new concepts emerging in 21st century thought, including small, inexpensive and decentralized “smart” resources that give the control back to the individual.

Computer-driven Antigravity craft are a 21st century solution that empowers the individual with the choice of when, where, and how they will get to their destination. The last thing we need are more mass-transit hubs where we stand in line to board a jumbo jet, and in the case of Antigravity these large, centralized hubs run counter to what the technology is really all about.

Using present-day technology, we can build an infrastructure for light commuter Antigravity craft that will not only be safer than aircraft; they'll be safer than cars. Using the MAD/MHD technology that we developed at Personal Flight Systems, current technology could be put in place to begin alleviating traffic-congestion in

the context of technology that we already have – and the new finds that I've made since PFS closed in 2003 have raised the potential for success even higher.

Antigravity offers a solution to traffic congestion, urban sprawl, pollution, and the enormous stress that most Americans deal with on a day to day basis – in effect, by changing the paradigm of our society; we can eliminate the problems that plagued society throughout the 20th century.

My own situation has changed over time – I quit contracting for big IT/telecom firms to focus on the website, which is a business that I currently run from home. Despite the need for occasional travel, I no longer have to commute during peak hours, and consequently no longer have to sit in traffic on I-5, I-405, or the 520 Floating-Bridge for hours on end.

Despite my not having to deal with traffic, I'm a parent, and I realize that my child will have to face this issue sooner or later. Like you, my hope is that somebody will come along with a solution so that the children of today aren't mired in the traffic-jams of tomorrow. Like you, I'm wishing against a star that we can eliminate pollution and urban sprawl to reduce some of the pressure on our child by the time he's reached adulthood – and like you, I often feel powerless to deal with the pressures that the future holds in store for him.

My own efforts to solve traffic congestion, urban sprawl, pollution, and the other problems arising from the limitations of our transportation paradigm have led me to re-invent American Antigravity as a non-profit organization. Our goals are to foster the research to solve these challenges, and to provide the results to the public to begin the transformation to 21st-century technologies. We need all the help that we can get, but our hopes are high – people from every corner of the globe are facing similar challenges, and our global collaboration to develop solutions progresses further every day.