


Street Smarts

No more wrong turns.
No more crumpled maps.
At least, that's the promise...



In the City

Finding your way through the concrete jungle is always difficult. Reconciling your location with unfamiliar street signs is virtually impossible... one-way intersections mock you as you attempt to find somewhere, *anywhere* to make a left turn and get back on what you hope is the right track. We can all use some help every now and then, and the makers of GPS systems claim they're here for us. But can a car navigation system guide you through the maze of city streets even when tall buildings block the GPS signal? **Orli Van Mourik** put her trust in the Pioneer AVIC-505 to find out.



Roaming the Countryside

When planning a day trip, the toughest part is figuring how much fun you can pack into that one day. Can a nav system direct you to the best sites *and* get you there on time? **Sean Downey** put the Alpine PowerNav to the test in his quest for the perfect wine.

Off the Beaten Path

It's hard to find a point of reference when one stretch of road looks pretty much just like the next. Can a nav system pinpoint your location and lead you back to civilization when you're stuck in the middle of nowhere? **Gordon Mah Ung** first had to get lost with the Magellan 750M to find the answer.

Do you know the way to San Jose? More importantly, can you find that out-of-the-way Thai restaurant you were supposed to be at 20 minutes ago while dodging through three lanes of rush hour traffic with your friends shouting directions at you? It's easy to get lost or confused, wondering whether your destination is around this corner or the next. If you want to be absolutely sure of where you're going, whether you're driving to a local restaurant or on a cross-country jaunt, you're better off ignoring the guy in the back who talks like he's swallowed an atlas and putting your trust in a car navigation system.

With a direct line to a network of GPS satellites and a database of addresses, car navigation systems keep you constantly updated on where you are, where you're headed, and what your next action should be. Just enter your destination and let the nav system guide you through the maze of one-way streets, restricted roads, and jumbled intersections. Even if you never get lost (or just don't admit to it), a car navigation system can often show you a more efficient route. For more on how the GPS system works, check out the sidebar on page 64. **■**

ILLUSTRATION: A. SKWISH



PHOTOGRAPH © KEVIN TWOMEY

3 The Pioneer AVIC-505's voice interface lets you tell it where you want to go today. Just don't stray from the path it chooses and you'll be fine...

To determine how useful a GPS is for the common man, we installed three navigation systems in three different cars and drove off in three different directions to find out how the systems helped — or hindered — the average day trip. We drove through San Francisco to see how well one system handled the urban environment. We traveled through the Santa Cruz Mountains and down to the beach with another to see how well it operated in remote environments. And we took a trip to Napa to see if one of the systems could help us find some good wine. Here's what we found out:

In the City

Product: Pioneer AVIC-505
Price: \$1,200 (\$650 for the monitor)

The world can be separated into two, distinct categories of people: those who read manuals and those who throw them away with the box. I definitely fall into the second category. If I'm spending over \$500, I don't want to be required to do much beyond locating the "on" button. Therefore, I went in with the expectation that the Pioneer AVIC-505 navigation system would be installed, operated, and maintained with little or no effort on my part.

The installation process was quick and painless. As a new car owner, I was concerned about where the unit would go and whether it

would leave any lasting marks if I removed it. The Pioneer fit neatly into the vehicle. The CD-ROM drive, which holds the mapping software, was thin enough to slip underneath the seat unnoticed. The sensor, microphone, and antenna were mounted unobtrusively, and the monitor fit directly beneath my stereo system. The technician set everything up for me before handing the car over and I was able to take it from there and drive through San Francisco and across the bridge to Berkeley without consulting the manual once.

The Pioneer AVIC 505 offers a voice interface, easy-to-use menus, built-in flash memory, and an advanced mapping database. The menus were pretty simple, but inputting information was not. Keying in my personal password often took a couple of minutes, owing to the jumpy remote control. The route programming process took up to seven minutes, which is a long time to sit with your car idling, particularly if you find yourself in an area where people are willing to mortgage their souls for a parking space. The remote control gets more manageable over time, but at first use it's a little frustrating.

Once I got on the road, the AVIC became more cooperative. The overhead maps were simple and easy to read. A bright green arrow

Handheld Alternative

It doesn't plan your route or talk you through your directional dilemma, but Garmin's incredible eMap (\$300) may be the last map you ever buy. Packing a 12-channel GPS receiver into a unit a little larger than a pack of Camel 100s, the eMap reads its database info from 8MB or 16MB memory cartridges. A single 8MB card can store every street in the greater San Francisco Bay Area and thousands of restaurants, ATMs, gas stations, and other points of interest. You also don't need to buy maps for each region like some systems; with the optional Garmin Metro Guide CD and a PC, you can download the area you want to visit into the unit. Downloads are painfully slow, but once completed, the eMap is invaluable.

During a downtown San Francisco shopping spree, the eMap proved to be sensitive enough to grab satellite



signals even among the tallest skyscrapers. Finding the way from Nordstrom back to the parking lot, the eMap was right on the money. There are display options missing on the eMap that more cumbersome (and expensive) GPS units feature, but you should think of the eMap as more of a portable electronic map than a GPS unit. It can be invaluable for hikers, too, since it allows you to mark your base camp before you wander. Combined with the optional Garmin topographical maps, the eMap can be handy for more adventurous backpackers as well.

— Gordon Mah Ung

PHOTOGRAPH BY ARNOLD TOOSE, JD

CAR NAVIGATION

☑️ traced my progress as I went a long, so I always knew where I was and where I was heading. When I did wander off the system's preprogrammed path, it took the AVIC over a minute to calculate a new route. There's something a little disconcerting about pulling over to the side of the road while the machine decides where you're going, but other than slowing down to five miles per hour — which is likely to aggravate your fellow drivers — there aren't many other options.

The Pioneer system did eventually get me to Berkeley. Once there, I decided to test out the AVIC's huge listing of points of interest (POIs), which include ATMs, hotels, restaurants and so on, all conveniently organized by type. I asked to be directed to an American food restaurant within six miles, and the AVIC successfully led me to a great burger joint downtown. After a couple of hours, I headed back home — the long way. I had a little time on my hands, so I decided to try out the voice recognition feature.

I was curious enough about this option to actually refer to the manual, and that's where my frustrations began. Despite carefully following the instructions, my commands weren't always recognized by the nav system. After three tries it heard me, started calculating my route to the nearest ATM, and then promptly froze with a system error. Restarting the car had no effect; the AVIC was pouting.

I've since been informed that fixing the unit only requires reinstalling the system software, but that's something I'll leave to the experts. As a practical alternative to a good, old-fashioned map, Pioneer's unit leaves a lot to

be desired. While further development means improvements in performance are likely, at present, even the strong POI features can't compensate for the AVIC's glitches and frustrating sluggishness.

— Orli Van Mourik

Off the Beaten Path

Product: Magellan 750M
Price: \$2,500

The Magellan 750M is a rugged little unit that packs the power of more permanent nav systems. Everything you need is tucked into a portable suitcase, which you can easily move from car to car. While its portability is certainly a big point in its favor, the lack of navigation sensors means that it'll never be as accurate as its in-car brethren.

Installing the Magellan is a five-minute affair. I simply plugged the power cord into my cigarette lighter, popped the magnetic mount GPS antenna on my roof, and tucked the case under my seat. My nav system came with a universal mount that clips the display unit to a heater vent. It's not the most elegant solution, but it's functional and doesn't cost you hundreds of dollars in installation fees.

To test the 750M, I had it direct me to the Santa Cruz Beach Boardwalk (sort of the West Coast equivalent of Coney Island). Along the way, I made a stop at the Bermuda Triangle of California — the famed Mystery Spot, a backwoods oddity where gravity seems to behave in ways that Newton never imagined, and both magnetic fields and radio signals suffer from inexplicable disruptions.

Like the other two nav systems in this feature, the 750M handles street level routing with vocal prompts to aid navigation as well as displaying the closest ATM or gas station on its overhead view. The vocal prompts are



PHOTOGRAPHS © KEVIN TWOMEY

☑️ The rough and ready Magellan 750M is simple to install and easy to transfer between vehicles.

Anatomy of a roadtrip

Road trips aren't all fun and games, you know. Without a good idea of where you're headed, you'll find yourself in the middle of nowhere fast. As you can see from our snapshots, we did just fine with the guidance provided by our nav systems.



After programming the Alpine system, Sean is ready for his road trip.



Gordon had to abandon all hope of GPS navigation the closer he got to the Mystery Spot.



The handheld Magellan display makes it easy for backseat drivers to take control of where you go.



We had a hard time keeping our eyes off the colorful display on the Alpine system.

selectable between male or female, and there's plenty of advance warning before your turn comes up. When entering mazes of crisscrossed highways, it also let me know when I should stay on the current freeway. And though the display is on the small side, the LCD screen is bright enough to be visible in direct sunlight.

Magellan says the 750M is able to improve on the accuracy of GPS by comparing the course you're driving to the shape of the road in the database. This system seems to work pretty well, as the 750M was eerily precise at times. Still, the lack of a speed sensor cable directly connected to the car showed its weakness at times; during some stops, the map display would spin in circles for a few moments. This also means that the Magellan 750M relies more heavily on GPS signals than an installed system, which can keep track of the distance it has traveled to help recalculate a new set of directions. This can cause major problems when you can't get a clear connection with at least three GPS satellites. Because of this, I quickly found the 750M to be no help at all as I entered the dense forest and hills of the Santa Cruz mountains and got closer to the Mystery Spot. The Magellan wasn't the only thing that couldn't pick up reception, though; I couldn't get a signal with the Garmin eMap hand-held GPS unit or any of the five wireless phones I brought along. It's no wonder — the Mystery Spot is rumored to have a UFO buried beneath that interferes with electronic signals.

Of course, the strange phenomenon I experienced at the Mystery Spot can be explained by its location in a remote valley



Alpine's system is about as slick as it gets, but the same money could keep you in maps for life...

with no cell phone transmitters and limited line of sight to enough GPS satellites. While I don't believe in the UFO rumors, there's some pretty weird stuff happening in those hills. Once clear of the Mystery Spot, the 750M quickly directed me back to civilization and the Beach Boardwalk where large quantities of salt-water taffy soothed my spooked soul.

The 750M's biggest advantage over the other systems here is definitely its plug-and-go installation, especially when you factor in the cost of installation (as much as \$500). Losing the security of the other units' additional in-car tracking features, however, may be too high a price to pay.

— Gordon Mah Ung

Roaming the Countryside

Product: Alpine NVE-N851A PowerNav
Price: \$2,000 (\$2,000 for the Mobile Multimedia Station)

After explaining the ins-and-outs of my new Alpine NVE-N851A PowerNav system, Rui programmed in a destination to show me how the system works. The only problem was, the destination wasn't even close to where I was going. All the way down the freeway the PowerNav kept trying to get me to go to this address. After I'd pass an exit, it would quickly calculate a new route and pipe up with "left turn ahead," in its patient but firm voice. It just wouldn't give up. **W**



As Orli was stuck in traffic on the Bay Bridge, she wished her nav system could take her another way.



The designated driver, Sean, swears he didn't do any wine tasting and we believe him.



The wine and the beautiful Napa countryside made our picnic at the end of the day all the better.

Hour 4

Hour 5

Hour 6

Hour 7



Here's photographic proof that the Mystery Spot is a place where gravity behaves like nowhere else.



None of the nav systems helped us get through congested traffic.

After her stressful trip to through the city, Orli is just happy her car is still intact.



Rui is the manager of the electronics department at the specialty shop that installed the Alpine system. Combined with Alpine's Mobile Multimedia Station, the nav system is a complicated beast to install, so he had his work cut out for him. The DVD-ROM navigation unit was mounted under my seat with the GPS antennae trailing the length of my car to the trunk. Under the passenger seat was the input/output block, the dash housed the Mobile Media Station, and the mess of cables that connected everything was tucked under the carpets. When I dropped off my car, Rui told me the installation was an overnight affair. Unfortunately, it took a little longer to install the entire system because my car was a bit old and he had trouble finding the right speed sensor cable for it.

Now I was running late and didn't have time to stop the car and input the correct address. For my safety, the PowerNav locked out the navigation menu while my car was moving — which is understandable since I'd probably plow into someone while punching in a new destination. That's not to say that the Alpine interface is hard to use — it just has an overwhelming number of potential destinations to dig through. As the first DVD-ROM based nav system, the Alpine NVE-N851A is packed to the gills with detailed maps, address info, and numerous points of interest across the entire U.S. For just about any destination — ATMs, historical monuments, or parking garages — the Alpine knows how to get you there. But on this trip I was just interested in wineries.

After picking up my friends, I reprogrammed the PowerNav with a list of Napa Valley wineries

and let it plot a route. All we had to do was listen for the verbal queues and glance down at the display at intersections, where it showed the exact layout of each crossroad and how to get through them. On the open road, the screen displayed a bird's-eye-view of the route ahead, with the streets and highways bending and turning in front of us. It also reported the distance to our destination and ETA, which was handy because we wanted to pack as many wineries into our trip as possible.

While all the menus are accessible onscreen, I ended up using the remote control. The mini-joystick on the remote is a bit hard to get used to, but I quickly mastered it and was bouncing around the simple menu system at will. When I used the buttons on the display I always ended up staring too long at the LCD screen and ignoring the road.

Alpine's Mobile Multimedia Station is a sharp piece of work, combining a CD player and LCD display with hookups for a DVD player, mobile VCR, and even a game console. Given my penchant for staring at anything shiny, this could be dangerous, but like the navigation system, the Multimedia Station takes your safety into consideration and won't let you watch anything distracting while you're driving.

On our way back to San Francisco the PowerNav took us a way that none of us had been before, but at this point we were comfortable putting our trust in its navigation instructions. I almost wish I could have turned the steering wheel over to the PowerNav completely so I could taste more wines, instead of playing the part of the designated driver.

— Sean Downey

Global... what?

While the Global Positioning System (GPS) seems to have been invented for people born without the navigational instinct, it was actually developed by the Department of Defense to help keep track of operatives in the field. This makes a lot more sense than the government going to all the trouble (and \$24 billion expense) of launching 24 satellites into space so ordinary Joes and Josephines could find their way to the nearest drive-through. But thanks to the seemingly limitless capacity of American entrepreneurs to exploit new technologies for commercial gain, GPS isn't just for spies anymore.

In detailed explanations of how GPS technology works, the authors tend to throw around phrases such as "data packets," "transmission cycles," and "pseudo-random bit patterns," but essentially, all you need to know is this: a small sensor installed in the receiver unit locks onto three or more GPS satellite signals. The unit calculates its distance from each respective satellite, and uses triangulation to determine its location within about 50 feet. It's simple geometry, but it can mean the difference between making that dinner date or spending hours driving around in circles.

There are a variety of GPS-based navigation systems on the market today. You can buy a car that comes equipped with a nav system or install one in your existing vehicle, which is what we did. If you're looking to buy an in-car system, be prepared to shell out some serious cash — car navigation systems are still a luxury item. They come in high-end vehicles, like the Mercedes-Benz S500 and the BMW 740i, both of which list at over \$60,000. There are more modest options available, like the Acura 3.2TL, but that will still run you about \$30,000.

— Orli Van Mourik

Which one for the Road?

Product	Pros	Cons	Verdict
Alpine NVE-N851A \$4,000 (with display) www.pioneerelectronics.com	Fast and flexible routing system, enormous POI database	It's difficult to install and very expensive	If you've got the money, the Alpine's the best T3 ★★★★★
Garmin eMap \$300 www.garmin.com	Fits in your pocket, Metro Guide CD stores maps for you to upload	No route planning, not as powerful as other "traditional" GPS systems	A very appealing, compact no-frills system T3 ★★★★★
Magellan 750M \$2,500 www.magellangps.com	Supremely portable design, choice of male/female vocal prompts	Lack of speed sensor cable means the 750M is reliant on satellite info alone...	...but the transportability this brings is well worth it T3 ★★★★★☆
Pioneer AVIC-505 \$1,850 (with display) www.pioneerelectronics.com	Voice interface, large POI database, that's about it...	Slow to recalculate routes, the system locked up and needed rebooting	We'd hoped for better from a player as big as Pioneer T3 ★★★★★