Lost & Found
Can the new sense-of-direction science help you find your way around Boston? One intrepid reporter tries to find out.

By Chris Berdik

Consider the many years that Bostonians have lived with the Big Dig, at a cost nearing $2 billion per mile, it's no wonder we expect a lot from the transportation project. We want to zip beneath town, bathed in fluorescent light, while white-tiled barriers bar by with unchecked speed. We want the liberated, above-ground parcels to tell the story of Boston's history, to express the essence of every neighborhood, to engage the waterfront with greenery and waterways. Chinatown residents want some of their neighborhood back; same with the North End. But what I want to know is this: Will it be any easier for me to find my way around town?

I am heartened to learn that the Turnpike Authority put some thought into the question in its "Corridor Master Plan," which was released in 2001. In a section titled "Visual Analysis," it is confidently stated that "the removal of the Artery represents an opportunity to recreate mental maps, to rediscover visual markers long overshadowed by the elevated structure, and to discover new landmarks that signify the city's changes." But the authors also acknowledge that the Artery may be missed by some perplexed travelers: After all, for all its elevated ugliness, it has "served to orient pedestrians and drivers as they navigated the downtown."

To put it in a word, as the report does by invoking the late Kevin Lynch, former urban design professor at MIT and one of Boston's preeminent urban planners, the Artery has high "imageability." It is visually distinct and significant, an anchor for memory and a compass for mental maps. In his seminal book "The Image of the City" (1960), Lynch considered the "imageability" of entire cities, including Boston, asking residents to draw maps and to give directions from one place to another. In the end, Lynch gave his town mixed reviews. Boston, he wrote, is "both vivid in form and full of locational difficulties..., confusions, floating points, weak boundaries, isolations, breaks in continuity, ambiguities, branchings, lacks of character or differentiation."
The human sense of direction, unlike that of animals, has been given scant attention.

The wires out of harm's way, a chore affectionately called "wrangling." The first virtual world I entered, known as "funhouse," was meant to accustom me to moving around in computer-generated reality. I walked along a green surface dotted with blocky, digital trees beneath an unblemished sky of cobalt blue. To my left was a deep chasm, spanned by wooden planks, with a merry-go-round on the other side. On my right was a massive, rotating cylinder that turned me end-over-end when I shuffled inside.

Funhouse was followed by "extreme funhouse," where the boards across the chasm were skinny rails and the giant cylinder spun me with dizzying speed. At one point, I accidentally tumbled into the extreme chasm, and I also fell backwards off an extreme elevator, which then, due to a graphics programming quirk, promptly descended onto my head.

After this excitement, the funhouse disappeared and the science began. I was put through a series of "triangle completion" tests, where I was told to enter a virtual environment and walk from a red pole to a yellow pole to a blue pole (only to have them disappear behind me). I was then instructed to return to where I believed the red pole could be found. It was a task I repeatedly failed, nearly walking into the lab's brick wall at one point. My performance improved only when the lab staff introduced a few virtual landmarks, including a camel, a traffic cone, a harp, and a pink flamingo.

My experiences navigating the virtual world fit a major hypothesis of William Warren, the VENLab's principal investigator. "When most people say 'sense of direction,' I think they mean 'path integration' or 'dead reckoning,' which is keeping track of your position and orientation as you move around," Warren explained. "But I think our ability to do path integration is pretty crude."

Warren said that other researchers have theorized that any cognitive-mapping ability humans possess is probably located in the brain's relatively primitive hippocampus. Some scientists have also found evidence, using maze experiments, that dead reckoning is a skill more fully developed in men, possibly due to the ways in which evolution has shaped different gender traits for male hunters and female gatherers. Yet Warren says that VENLab, men complete the virtual triangles and navigate the virtual hedge maze no better than women do.

Warren and his fellow researchers were somewhat perplexed when I brought up two aspects of my personal experiences with disorientation. One is what I call "false directional instinct" (for example, firmly believing that north is south) and the other the recurring panic over getting lost. No one offered a conclusive explanation. But as it turns out, both topics are discussed thoroughly in a book published last year called "Inner Navigation" (Scribner) by Erik Jonsson, a Swedish-born engineer who lives in San Diego.

Jonsson's book, which is more anecdotal than scientific, is about why we get lost. Like Lynch, Jonsson examines several cities, even naming chapters in their honor: "The San Francisco effect" (the problem of too many waterfronts); "Misery in Minneapolis" (the problem of confusing train approaches). Boston's difficulties are conspicuously absent, which seems a gross misjudgment in a book about losing one's way. In any case, unlike the VENLab folks, Jonsson believes that humans have a very reliable dead-reckoning system, at least those humans who grew up in nonurban areas where this skill can properly develop. "Abilities like these are not learned on a sidewalk," he declares in the book.

Furthermore, in Jonsson's counterintuitive opinion, the instinct to head off in precisely the wrong direction (as I often do when emerging from a subway station) is actually the sign of a robust sense of direction, not a weak one. Those who have genuinely poor spatial abilities don't have innate directional instincts. They simply rely, unlike me, on landmarks. As for panic, he argues it results when someone's cognitive map, which is located on "the deepest level of consciousness," gets flipped around. According to Jonsson, individuals with a weak sense of direction do not possess such maps; therefore, they might experience "annoyance and frustration, yes, unreasonable panic, no."

According to Jonsson, we sometimes confound our own sense of direction by thinking too much about it. "Our intellect is in the way," he writes. Certainly this made sense—and it explained quite a bit about my Boston suburban experience.

Ultimately, Jonsson agrees with Lynch's assessment that knowing where we are is fundamental to our sense of well-being, and that getting lost, as Lynch wrote, "carries overtones of utter disaster." All the same, in describing our aspirations for public space in a way that seems to take in all the hopes Bostonians have for the city that will emerge from the Big Dig, Lynch believed that the city's image "should speak of the individuals and their complex society, of their aspirations and their historical tradition, of the natural setting and of the complicated functions and movements of the city world."

Nevertheless, Lynch also insisted that the meaning of cities is in large part a matter of navigation: "Way finding is the original function of the environmental image, and the basis on which its emotional associations may have been founded." In other words, it could be that what we're really looking for is a place that will have "not only a past, but a future." The Big Dig Boston is simply a more beautiful and more fulfilling idea of how to get from here to there.