

aniel Kish lost his vision at the age of one. Nevertheless, he has developed a different sense that allows him to "view" the world—his tongue! With a click of the tongue, "tsk, tsk," he sends out a signal. Then his finely tuned sense of hearing interprets the echo to help him learn about his surroundings. He senses instinctively know how far the sound traveled before bouncing back. This tells him where an object or wall is located in the immediate area.

Today, Kish is in his mid-40s and he cannot recall how or when he began using this system. He does remember, though, scaling the fence around his home to enter the neighbor's property at the age of two and a half. He clicked his tongue the entire time to sense what was around him.

Here is how Kish describes his first day at school, at the age of six:

The bell rings for recess and all the children happily run out of class. But, unlike them, I cannot see—at least not with my eyes. Instead I give a click of the tongue, producing a certain sound, and through it I hear the echo of the wall on my left side. I walk with my hands slightly outstretched so I won't bump into chairs that may be moved out of place. I hear children laughing and shouting through the open door, and by clicking my tongue again, I hear exactly where the doorway is in front of me. I go through it for the first time, out into the play yard....

After a few steps I stop to listen and analyze. I stand on a crack in the sidewalk that runs parallel to the building behind me. I click loudly with my tongue and turn my head from side to side. The way is open. It is interrupted by quick shouts, bouncing balls and shoes that run back and forth. What is around me? How do you get there? How do you get back?

Clicking quickly with my tongue and sensing with my head, I walk carefully forward, sensing flashing images of bodies that jump here and there. I go to wherever the place is empty, avoiding groups of people, staying far away from the bouncing balls. I am not afraid—for me it is like a puzzle. I turn my head to the side and click over my shoulders. I can still hear the wall of the building. So long as I can hear it, I can find my way back.

The ground starts sloping downward. As I go further and keep clicking, the echoes in front of me take on a softer tone, meaning that here is a field with grass. Eventually my feet find the grass. I can walk quicker, now that I'm away from the rushing bodies and flying objects. Suddenly I sense something in front of me. I stop. "Hello," I take the chance to say, thinking that someone is standing there quietly. But when I click with my tongue, I realize it is too thin to be a person.

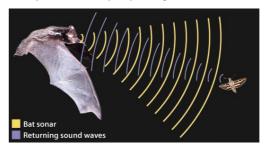
Even before I stretch out my hands to grab it, I can tell that this is a trunk. I click around myself and I can only barely hear anything. Letting go of the trunk, I go on to the next item. I hear that this is another trunk, just like the first. Then I sense another and another. There are nine trunks, all in a row. Later I found out that this was a slalom course. Although I never tried playing with it, I practiced my bicycle skills by riding zigzag between rows of trees while I constantly click strongly with my tongue.

At this point I hear the signal. I listen around myself, clicking, but I can't hear the building. I clap with my hands. I hear something from the same direction where all the children are running around. Later, when I know the area better, I also run. As I go forward, clicking and clapping, I can hear a wall that is far away becoming closer and closer, louder.

Children stand lined up in front of the wall, but I don't know which class is mine. I ask and someone shows me the right direction. Clicking and sensing again, I find the end of my row. As we go into class, I click to make sure that I don't bump into anyone. Sensing that I am at the correct distance from the wall in front of me, I bend over to the left and find the desk that has a Braille writer on it. I sit down in my chair and my thoughts wander. I wonder



A blind person can detect a pole by listening to the echo of his voice.



Bats use echolocation to catch their prey.

to myself how large the play yard is and whether it has a slide. I will find that out at the next recess.

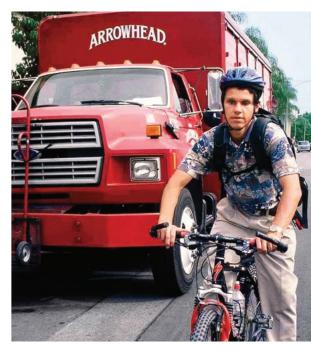
Using his tongue to sound "tsk, tsk," the young Kish discovered the world around him. He constantly continued to develop his unusual sense. Now he is capable of walking among others whose sight is intact without feeling like he is missing out on anything.

## "Learn How to Park"

Daniel Kish lives in a simple home in Long Beach, California. Michael Finkel, a journalist, arrives at Kish's home to visit this incredible person. Kish's opening greeting is to chide him for his driving habits. "You're going to leave your car so far away from the sidewalk?" Kish asks from the steps in front of his home.

As Finkel approaches to shake Kish's hand, he glances back over his shoulder. The man is right. His car is parked a foot and a half into the street.

If Finkel doubted for a second whether Kish was indeed blind, he was quickly



Although he is blind, Daniel Kish rides his bicycle like anyone else.

disabused of that notion. Sitting in Kish's living room, he watches as his host removes his fake eyes: thin, curved plastic lenses with a light brown ring painted around the black pupils. To prevent them from becoming dirty and sticky, they must be cleaned several times a day. Finkel watches as Kish wipes them clean and replaces them in his eye sockets. No doubt about it; Kish is "blind as a bat."

The 46-year-old Kish was born with a disease that infected his eyes. It was necessary to remove both his eyes at the age of 13 months to save his life. To compensate, he has developed such an incredibly acute sense of echolocation that many people doubt its authenticity. They believe he may be the perpetrator of a fantastic hoax. Kish has proven to the world, however, that humans are capable of using their other senses to replace their vision.

In fact, Kish finds his way around using a sense most people do not realize they even have. He clicks his tongue backward from the roof of his mouth, just behind the front teeth, and interprets the nature of the echo to read the environment around him. That's how Kish sensed the precise distance at which

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