

# Echolocation gives blind people a visual on the world

By Los Angeles Times, adapted by Newsela staff on 09.15.15

Word Count **793**



Ryo Hirosawa (left) leads the way as he learns the art of echolocation to examine and analyze the environment from instructor Brian Bushway in Long Beach, California. Both men are blind. Photo: Robert Gauthier/Los Angeles Times/TNS

Ryo Hirosawa, who is blind, could not figure out what was in front of him. Was it a house, a car, a hedge, a fence, a tree or open space?

Hirosawa pushed the tip of his tongue hard to the top of his mouth, and made a sharp click.

As its echo came back at him, he couldn't quite figure out if it sounded scattered, as if it hit foliage or a chain-link fence. Was it a clean pulse bouncing off a stucco wall? Was it hitting multiple objects?

Hirosawa kept clicking, and the landscape gradually began to emerge as a faint picture in his mind.

"There is a tree, I think, here, which is tall, and I see a house behind," Hirosawa said.

## **Confirming What The Clicks Told Him**

Hirosawa and Brian Bushway, his instructor, stepped into the yard to find out whether he was right. Bushway tapped his cane against the tree trunk and reached up to grab a branch and shake the leaves.

Bushway then knocked the wood panel of a wall.

“A house,” Bushway said. “Awesome, very good.”

This quiet street in Long Beach, California, is at the center of an unusual movement. It is the home of World Access for the Blind, an organization that teaches blind people to navigate using tongue clicks.

Its students learn to better understand the space before them by sending out sonar, as dolphins or bats do, to get a read on their surroundings. It is a human form of echolocation - finding objects by reflected sound.

## **Study Shows How Brain Orients Itself**

Daniel Kish, who is blind and began the organization, has worked with scientists to study how the brain does this. Researchers found that when people echolocate, they process acoustic, or sound, information in the part of the brain associated with seeing. They did not use the part normally associated with hearing.

When Kish was small, he began made clicking noises with his tongue to navigate, as other blind children often do. But unlike many other parents, who worried that their child might sound weird, his mother and father didn't discourage him.

He rode bikes and climbed trees. He did not understand, though, how the clicking was helping him until he was 11, when a friend pointed out that he was doing what he had read bats do.

“I hadn't thought about it,” he said. “I was just a squirrely kid who liked to be active.”

## **Brain Adjusts To "See" With Sound**

Bushway is also blind, but walking through school, he could still see columns in the hallway, even count them.

When he met Kish, he told him about this phenomenon. Kish concluded that his brain was forming an image from the sound reflecting off the columns.

“I was imaging acoustically,” Bushway said. “The brain creates images whether you send it patterns of light or patterns of sound.”

Kish showed Bushway how to skateboard. He uses a long cane to read the road surface and curbs and the clicking to spot parked cars, intersections and turns ahead.

With the help of another instructor who could see, they started mountain-biking trails in the mountains.

## **Teaching The Method, Traveling The World**

In 2001, Kish started the organization to teach the clicking method. Since then his team has traveled to more than 34 countries.

Some advocates for the blind complained that the clicking would seem strange to the public, and make people avoid blind people.

The National Federation of the Blind is neutral on Kish's work. "All blind people use echolocation to an extent," said Chris Danielson, a spokesman for the federation. "Mr. Kish has a unique way of doing it that seems to work for him and others."

Danielson said many blind people tap their canes for a similar effect.

## **Tongue Clicking More Exact Than Cane**

Kish says the click is more effective because it can be directed. It also doesn't change with the surface of the ground or the angle of the cane.

Brandon Shin, 17, came to Kish for help two years ago after slowly losing his sight. Shin's father was extremely suspicious of the clicking method, but Shin says he bothered his parents so much, they let him have lessons.

Now he clicks all the time, and recently hiked a canyon by himself. "Just the cane and my clicking," he said.

He says some kids at school made fun of him, but others have been fascinated with it.

His father says since he watched his son get around obstacles as though he could see them, his own doubts have faded.

"Sonar has given Brandon self-esteem and courage," Michael Shin said. "From a parent's point of view, we're worried he'll get hurt, but we're proud. He's doing it better than we expected."

## Quiz

- 1 What experience do Ryo Hirosawa and Daniel Kish share?
- (A) They both helped develop the method of clicking to help people who are blind.
  - (B) They both work for World Access for the Blind.
  - (C) They both use clicking to be more independent.
  - (D) They were both born blind.
- 2 Based on information in the article, all of the following are reasons the National Federation of the Blind is neutral on Kish's work EXCEPT:
- (A) it might make blind people give up using canes
  - (B) some people believe the clicking might seem strange to people
  - (C) it might make some people avoid blind people
  - (D) blind people use their canes for a similar effect

- 3 Read the following sentence from the section "Study Shows How Brain Orients Itself."

*"I hadn't thought about it," he said. "I was just a squirrely kid who liked to be active."*

Which of the following has the SAME meaning as the word "squirrely" as used in the above sentence?

- (A) balanced
- (B) careful
- (C) serious
- (D) silly

- 4 Read the following sentence from the section "Confirming What The Clicks Told Him."

*It is the home of World Access for the Blind, an organization that teaches blind people to navigate using tongue clicks.*

Which of the following words could replace "navigate" WITHOUT changing its meaning?

- (A) maneuver
- (B) neglect
- (C) sail
- (D) neglect

## Answer Key

- 1 What experience do Ryo Hirosawa and Daniel Kish share?
- (A) They both helped develop the method of clicking to help people who are blind.
  - (B) They both work for World Access for the Blind.
  - (C) They both use clicking to be more independent.**
  - (D) They were both born blind.
- 2 Based on information in the article, all of the following are reasons the National Federation of the Blind is neutral on Kish's work EXCEPT:
- (A) it might make blind people give up using canes**
  - (B) some people believe the clicking might seem strange to people
  - (C) it might make some people avoid blind people
  - (D) blind people use their canes for a similar effect

- 3 Read the following sentence from the section "Study Shows How Brain Orients Itself."

*"I hadn't thought about it," he said. "I was just a squirrely kid who liked to be active."*

Which of the following has the SAME meaning as the word "squirrely" as used in the above sentence?

- (A) balanced
- (B) careful
- (C) serious
- (D) silly**

- 4 Read the following sentence from the section "Confirming What The Clicks Told Him."

*It is the home of World Access for the Blind, an organization that teaches blind people to navigate using tongue clicks.*

Which of the following words could replace "navigate" WITHOUT changing its meaning?

- (A) maneuver**
- (B) neglect
- (C) sail
- (D) neglect