参考译文

Human Echolocators Use Tricks Similar to Bats

人类回声器原理类似蝙蝠回声

Many bats use a system similar to sonar to navigate in the dark. They send out high frequency sound, sometimes as clicks, and get information about their surroundings by the timing and quality of the sound that bounces back. And just as turning up the light in a darkened room helps to illuminate the objects there, bats are known to turn up the intensity of their clicks when they have trouble detecting a target.

许多蝙蝠使用类似于声纳的系统，在黑暗中进行导航。他们会发出高频率声音，有时会发出咔嗒声，并利用返回声音的时间和质量，来获取周围环境的信息。就像在昏暗的房间里，灯光能照亮黑暗物体一样，蝙蝠在检测目标遇到困难时，也会提高检测强度。

"Now, bats have had millions of years of evolution basically to develop these mechanisms to dynamically adjust their emissions." Lore Thaler, a neuroscientist at Durham University in the UK. "And what we were wondering is, well, do people do the same?"

“现在，蝙蝠已经有数百万年的发展史，基本上利用这些机制来进行动态调整。”，英国杜伦大学的神经科学家Lore Thaler说。“我们想知道的是，人们也这样做吗?”

Because some people with impaired vision can indeed navigate using the echoes of finger snaps, hand claps, or mouth clicks <>. But it's not known how dynamic that ability is. So Thaler and her team presented eight expert echolocators with a challenge: could they tell whether a small dinner-plate-sized object was being held up about three feet from their head, by clicking alone?

因为一些视力受损的人，确实可以利用手指按扣，手掌或嘴巴点击“点击声音”的回响进行导航。但目前还不知道，这种能力的动态机制是如何运作的。因此，Thaler和她的团队向8位专家，提出了一个挑战：他们能否通过单击来判断，一个小饭盒大小的物体，是否被抬起离他们头大约三英尺的距离?

You can try this at home by the way, with a plate or a book. "And if you hold it very close to your face while you're speaking you can notice that the sound that you hear really changes. This is because the sound that comes out of your mouth when you speak is reflected by the object you're holding in front of you. And that's an echo."

顺便说一句，你可以在家里，试试用一本书等来测试一下。“如果你在说话时，把它贴在你的脸上，你会发现你听到的声音，确实发生了变化。这是因为，当你说话时，从嘴里发出的声音，会折射到物体上，从而把声音传递到你面前，这就是回声。”

But move the plate 45 degrees to the side…then 90…then behind your head. And the task gets harder. But similar to the way bats do, the study subjects increased the number of clicks, and their loudness, as the object became harder to detect—perhaps as a way to amplify the weak sounds echoing back.

但是，将盘子移动45度到一边......然后90 ......然后在你的头后面。任务变得更加困难。但类似于蝙蝠的做法，研究对象增加了点击次数和响度，当对象变得难以察觉时，“大声点击”——可能是放大弱回响的方式。

The subjects still had trouble detecting the object a full 180 degrees behind them—they did only slightly better than chance. But they guessed correctly 80 percent of the time when the object was diagonally behind them. And nabbed nearly perfect scores when the disc was to the front or to the side. The results are in the Proceedings of the Royal Society B.

受试者仍然无法检测到身后180度的物体——它们只比机会稍微好一些。但是当物体斜对着他们时，他们正确猜测了80%的时间。当碟片在前面或侧面时，会抓取近乎完美的音谱。该研究结果发表在《英国皇家学会会刊B》上.

Thaler says the study gives echolocating learners a shortcut: "If you're not sure, make a couple more clicks, and also make them louder." To produce echoes that more accurately reflect the world.

Thaler说，这项研究给学习者提供了一个捷径：“如果你不确定，再多点几下，也会让他们更响。”为了得到回声，可以进行更多更精确的点击，让世界都能听到。

听力原文

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