



Keeping Time

On a quiet back street in Cambridge, England, the Elm Tree pub is filling with students and local residents on a Monday evening in March. They're here to listen to, and in some cases play, jazz.

At one end of the room, trumpeter Paul Stubbs and three or four other musicians are setting up drums, keyboard, and bass. A sax, guitar, trumpets, even a tin whistle, will come and go as the evening progresses. The musicians launch into a song, and the audience sits up, smiling and tapping its feet. The performers never meet outside these sessions, and each has only the vaguest idea of what the others do for a living; yet they play together as if they always have, their expressions varying from ecstasy, to deep concentration, to amusement at a shared joke.

Every so often Stubbs invites a hopeful member of the audience to join in with his or her instrument. Soon it's HHMI investigator Michael Shadlen's turn. A neurobiologist at the University of Washington in Seattle, Shadlen is at the University of Cambridge on a one-year sabbatical to explore decision making in the lab of computational neuroscientist Daniel Wolpert.

On his arrival last autumn, Shadlen picked up a city guide and read about Monday nights at the Elm Tree. Jazz is one of his passions—he likes to play guitar and compose—so he checked it out the following week and is now a regular. "It's a wonderful way to share a few hours with brothers and sisters who love this brand of music," he says, "It's one of the most delightful and welcoming things about Cambridge."

Shadlen is interested in how the brain decides and plans based on the informa-

tion it receives. Between the popular jazz numbers "Zigaboogaloo" and "Up Jumped Spring," he explains his current thinking: The rapid expansion of the human brain during evolution allowed it to decouple stimulus from response, freeing us from the need to act immediately. As soon as that happened, timing became critical to decision making; humans could decide when to act. The paradox is that people are relatively poor timekeepers.

"If I ask you to tap your finger to copy a one-second interval, you'll probably be out by one to two-tenths of a second," he says. "Now if I ask you to copy a two-second interval, your margin of error will be double that." Shadlen thinks music might hold some clues to the neural basis of that temporal wobble. "In a band, everyone comes together," he says, "What is going on there?" Humans might have invented dancing for a similar reason, he speculates: to marshal a sloppy timing mechanism by imposing rhythm on it.

Which brings us back to jazz. Shadlen is excited because tonight he might get to play John Coltrane's modern classic "Giant Steps." He considers the piece a beautiful rite of passage for all jazz lovers. The challenging number jumps between three different keys, and it's very fast. In the end, the band opts for "Summertime" instead. Shadlen will have to wait for another day to play Coltrane and his own composition, "No Say." He doesn't seem to mind, though, and he's still on a high when he leaves the pub. "You get this communication thing going through the music," he says.

—Laura Spinney



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MICHAEL SHADLEN