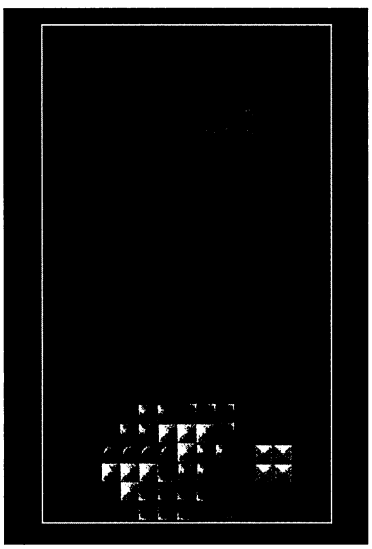
nesics still have access to perceptual memories in the cortex, despite having damage to the hippocampal regions of their brains that prevent them from recalling the game.

The finding suggests that the "parts of the brain responsible for the inability to learn must be different from those responsible for the images," says Richard Haier of the University of California, Irvine, whose previous brain imaging studies of Tetris players showed that many brain areas become active when novices first learn the game.

In the current work, Stickgold and his colleagues focused on Stage 1 sleep, the stage at which, as Stickgold explains, "your significant other pokes you and says you're asleep, and you say 'No, I'm not.' " In this case, a researcher did the poking. Novice Tetris players spent hours learning the game during the day, and then when they went to bed, researchers woke them up repeatedly during the first hour of sleep to ask what was on their minds (aside from wanting to sleep in peace). Nine of 12 people without amnesia said they'd seen images of Tetris blocks, sometimes rotating and sliding into place as they do during the game.



Mind the gap. Tetris player aligns falling blocks to fill gaps as layers build up at bottom of screen.

CREDIT: BLUE PLANET SOFTWARE

The researchers also tested five people who had extensive damage to the hippocampus and surrounding areas of the temporal lobe that prevented them from building new so-called explicit, or declarative, memories. For example, the subjects had no memory of the game (or the experimenter) from session to session. And even though other studies have shown that people with amnesia can learn new skills, such as tracing a shape seen only mirror-reversed, they didn't learn Tetris very well. "With complex skills like [those required by] Tetris, subjects may have to remember things declaratively," says memory researcher Larry Squire of the University of California, San Diego. Because the subjects probably can't keep the rules of the game straight, they don't have the opportunity to get faster and more accurate.

But even though the subjects don't remember the game, don't get better at it, and have no idea why they're being woken up in the middle of the night, they reported seeing what sound remarkably like Tetris pieces while they're drifting off to sleep. For instance, one reported seeing "images that are turned on their side. I don't know what they are from. I wish I could remember, but they are like blocks."

Why are people replaying Tetris in their sleep? Stickgold speculates that during sleep, the brain cements connections between a day's events and stored memories. This theory is bolstered by reports from some study participants who, unlike the novices, had played Tetris years before. These return players reported sleep images that portrayed the graphics from versions of Tetris they'd learned on, not the Tetris graphics they'd seen that day. The new experience, Stickgold says, calls up old memories that the brain interconnects.

Not all aspects of the experience are replayed during Stage 1 sleep, however. People seem to "extract what's relevant from an event and dump the peripheral details," Stickgold says. In Tetris, for example, the spinning pieces and disappearing lines are crucial parts of the game, but the computer monitor, surrounding room, and keyboard aren't important—and none of the Tetris players reported imagining them in their sleep.

The amnesia patients, because of the damage to their hippocampi, can't form the kinds of connections that would allow them to recall the game. But even so, they still retain perceptual memories, which float around in the cortex and return, disconnected, during sleep. **–LAURA HELMUTH**

IMMIGRATION POLICY

Growth in Visas Boosts NSF Education Programs

Last week Congress rushed through an immigration bill that gives a big boost to education programs at the National Science Foundation (NSF). The measure, which almost doubles the number of skilled foreign workers eligible for high-tech U.S. jobs under so-called temporary H1-B visas, marks a hard-fought victory for high-tech companies scrambling for talent. In addition, it provides more than $100 million to help NSF tackle what policy-makers say is the real problem: the need for more homegrown scientists and engineers.

"This bill begins to address our long-term challenge: ensuring that there are enough Americans with the necessary skills to fill these jobs," declared Senate minority leader Tom Daschle (D–SD) during floor debate on 3 October before a 96–1 vote on the bill, S. 2045. The House passed the Senate's version a few hours later on a voice vote.

The bill raises the annual ceiling on temporary visas for high-tech workers to 195,000 for the next 3 years from the current level of 115,000. Under the current law, the ceiling would have dropped to 65,000 in 2002. The bill sets no limit on the annual number of workers, estimated at up to 20,000, hired by universities and nonprofit research organizations.

The fees paid by industry to apply for the visas are expected to generate an estimated $275 million a year, with 55% going to the Labor Department for worker training programs. NSF will receive 38.2%, and unofficial estimates put its expected annual take at $105 million, a big jump from the $30 million it had budgeted for 2001. The new fee is $1000, double the existing amount. The increase came in a separate last-minute bill pushed through by supporters this week after legislators deferred to the House's constitutional right to initiate revenue measures and stripped the Senate measure of similar language.

The bill directs NSF to spend about 60% of its money on elementary and secondary school activities, ranging from new curricula and improved teacher training to after-school programs and partnerships with industry. The funds will greatly expand a $3 million after-school science enrichment program, begun this year, that plans to make its first awards next spring. The program, known as After School Centers for Exploration and Discovery (ASCEND), attracted three times the expected number of preliminary proposals, despite a requirement that applicants add at least 30% to the government's contribution. "We hit a nerve," says NSF's Jane Kahle. The bill also provides $20 million over 5 years for after-school technology training programs to be run by the Boys and Girls Clubs of America, which are already eligible for the ASCEND money. And it asks NSF to do a study of the differential access to high technology, the so-called "digital divide."

The rest of NSF's visa money would go to enlarge a college scholarship program that made 110 awards to universities during its initial competition last spring (*Science*, 7 April, p. 40). Each award typically allows a school to provide a 2-year stipend to 40 low-income students seeking associate, undergraduate, or graduate degrees in computer science, engineering, or mathematics. The legislation also boosts that annual stipend from $2500 to $3150, but NSF officials say that it is too early to know how the influx of funds will affect the overall size and number of institutional awards. **–JEFFREY MERVIS**