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MIT JUNIOR JASON KATZ-BROWN | MEETING THE MINDS

The Boston Globe

For him, Scrabble is a science



Jason Katz-Brown in his dorm room, which has a pink seesaw as well as the Scrabble board. (BARRY CHIN/GLOBE STAFF)

By Billy Baker, Globe Correspondent | April 9, 2007

Jason Katz-Brown has been described as having a "certain MIT feel about him." This could refer to the fact that he wears cargo shorts in the dead of winter or the fact that he has a large pink seesaw in his dorm room. Or maybe it's because he has memorized every word in the Scrabble dictionary that he always carries in the pocket of those shorts.

A 20-year-old junior at MIT, Katz-Brown is a star in the quirky world of competitive Scrabble. Last April, after just three years of playing, he was ranked number one in North American Scrabble after he won the Boston Area Scrabble Tournament. (He will try to defend that title in Westford on Friday.) But what's really got the Scrabble world buzzing about Katz-Brown is his role in creating Quackle, an artificial intelligence program that defeated a former world champion in the finals of a human vs. computer tournament in

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Quackle plays Scrabble a lot like Katz-Brown plays Scrabble, which "is not the word game you play in your parlor," said the writer Stefan Fatsis, whose book about the competitive Scrabble subculture, "Word Freak," inspired Katz-Brown to start memorizing words.

When you know all the words in Scrabble, as Katz-Brown and maybe a dozen other humans do, the game becomes something different. "The misconception is that it's about who has the better vocabulary," according to Fatsis, who says competitive Scrabble is really a process of solving a constantly shifting mathematical puzzle involving 100 tiles that can be arranged in over 100,000 eligible scoring patterns on a 15 x 15 grid.

To win at the elite level means consistently playing the optimal word - which is high-scoring but also blocks your opponent from playing the "premium squares" (which double or triple the value of a letter or word); leaves good letters on the rack from which to build a possible seven-tile "bingo"; and factors in possible future moves based on the unseen tiles, the score, and the configuration of the board.

What's interesting about Quackle is that, with all its mathematical power, it still loses to humans much of the time.

"Quackle wouldn't even be close to being the best Scrabble player," said Marlon Hill, 42, a highly regarded expert player from Baltimore. "Scrabble changes every move of the game. Quackle has the right name for sure, because the whole idea of using a computer to play Scrabble is a quack of an idea."

Quackle uses similar look-ahead algorithms to the ones in chess artificial intelligence. But while chess is a two-dimensional game, Scrabble is a three-dimensional game. "And that third dimension is luck," said Hill.

Many expert players say that Quackle's "look-ahead" analysis fails to match the nuance of a human player. If you're trying to look ahead earlier in the game, "you're wasting your time because there's too much randomness ahead of you," says Joel Sherman, who estimates that he beats Quackle half the time. "There's enough luck in the game that it's not really possible for pure word knowledge to defeat a slightly less pure word knowledge every time."

Katz-Brown has as close to that pure word knowledge as anyone. He says he can look at a rack and determine in a few seconds whether there are any seven-letter words to be made. "I guess my memory is well-suited to retaining things," he said in his shy, modest way. He said he wants to develop Quackle to study the way it plays and use that knowledge to "maximize the luck."

His friend Hill thinks he's wasting his time.

"He's brilliant, and he would be a great Scrabble player if he stayed away from them computer programs," Hill says. "He's going to end up playing like a robot, and I ain't worried about playing a robot."

Hometown: Richmond, Calif., now lives in an MIT dorm.

Education: Junior at MIT studying computer science.

Family: Father, Richard Katz, is a biochemist; mother, Clair Brown, is an economics professor at the University of California in Berkeley.

Hobbies: Plays on the MIT golf and table tennis teams; publicity director for the MIT lecture series committee; founder of the MIT Scrabble Club; plays goalie on an intramural hockey team.

On the 4 000 new words approved for North American Scrabble

last year: "Once you've learned all the words, the joy of learning disappears, so I was excited to get some new ones."

A flashlight and a printout of 8-letter words: What are "things Jason Katz-Brown brought with him to study while spending the night in an ice cave atop Mt. Washington?" ■

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