

New generation of square dancers intrigued by its math concepts

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Allie Hays' friends had a good laugh when they heard about the class she had signed up for at North Central College in Naperville: Mathematics of Square Dancing.

Hays thought it was pretty funny herself at first.

"I said, 'Are you kidding me? That's a reach,'" said the senior math major.

But after spending three hours a day for two weeks memorizing almost 100 dance "calls," then weaving in and out of complicated formations on cue, she has changed her mind. Amid constant movement, she has had to visualize and use math concepts like shapes and patterns, group theory, fractions and permutations.

"It's math in motion -- you're walking through mathematics and would have no idea you're working with concepts that most college math majors don't study until their fourth year," says math professor David Schmitz, describing square dancing as "solving a Rubik's Cube."

Saundra Bryant, a Chicago caller -- the person who stands and sings or speaks rapid-fire calls, or dance cues -- tested students' knowledge with a simulated dance Thursday. Disregarding traditional square-dance tunes, she typically sets her calls to everything from disco to Frank Sinatra to hip-hop.

As she crooned the lyrics of [Van](#) Morrison's "Moondance," she laid out the series of calls. Concentrating, the eight students stepped through the moves. Occasionally, Bryant stopped them to see if they could identify which dancers were the apex of a triangle or how many diamond shapes were in one formation.

It's all a far cry from the days of reluctantly clutching a partner's sweaty hand in a junior high gym class as you swing her 'round.

Over the last 50 years, square dancing has evolved from the early American barn dances that most people associate with the term into a worldwide subculture with fanatic followers who join clubs, memorize hundreds of calls, and are just as likely to be wearing jeans and sneakers as starched petticoats and cowboy hats.

About 1 million people worldwide [perform](#) some form of modern square dancing. They have organized themselves into distinct "levels" that require lessons and study, developed a standardized database of calls, and plan dances and conventions in cities across the globe.

In the U.S., devotees come from every walk of life, and clubs exist in small rural towns and the largest cities. Many gay communities in urban areas also have clubs, such as Chicago's Chi-Town Squares.

At its highest and most complicated levels, puzzle lovers, engineers, [computer](#) programmers and math teachers dominate the ranks. Square-dance clubs at Stanford University and Massachusetts Institute of Technology are thriving, and North Central has a fledgling club, the Square Roots.

"It's a constant [battle](#)" to fight the stereotype, said Clark Baker, a computer programmer who has been dancing with MIT's Tech Squares since 1974. "People think of a jug of moonshine and hay bales, and that it might be a nice activity ... for your grandparents."

Baker also is a caller. The dancers, organized in a square of eight, begin in a home position but have no idea which calls are coming. One call doesn't necessarily flow into any other, so the

caller has to work to keep [the square](#) working in precision. After several sequences, the final call must bring the dancers back to their original position.

"It's like puzzle-solving in real time," Baker said.

Most modern square dancers stick to a set of about 70 calls, wear the traditional get-up and dance regularly with a club. But a small fraction are challenge dancers, who know up to 1,000 calls and 100 "concepts" and add imaginary dancers to increase the complexity.

North Central's Schmitz, a dancer for more than a decade, is of the challenge persuasion. Like many square dancers, he worries about recruiting new fans to fill the ranks.

So he pitched a three-week course to college officials in hopes of exposing young people to an activity that lured him when he was a graduate student, he said. All those who signed up are math, science or computer majors.

At first glance, the class might not seem relevant to them. But like math, square dancing depends on dancers [performing](#) actions based on definitions, Schmitz explained.

In class, students laughed and teased one another while learning "Ferris wheel," "centers pass through" and "acey deucey." But they also took breaks to discuss snippets only math lovers could appreciate: the number of permutations possible in one call or how a rectangle formation could be sheared to create a parallelogram "concept" of a typical call.

Not everyone views square dancing as a big math problem. Baker said some devotees disagree about the "best" square-dancing experience.

Some traditionalists contend there needs to be live fiddle music and costumes, and that challenge dancers sap the fun out.

But some challenge dancers think dancing only mainstream is boring, he said.