SHU professor contributes to game-changing discovery

By Sean Quinn
Staff Writer

A Seton Hall University anthropology professor participating in a research team near Lake Turkana in Kenya has contributed to the discovery of the world’s oldest stone tools, which were dated to 3.3 million years ago.

Rhonda Quinn, assistant professor of anthropology at SHU and a West Orange resident, used the stable carbon isotopic signatures of ancient soil to recreate the environment in which the tools were made. By doing so, Quinn determined that the “hominin,” or human ancestor, who created the tools, had lived in a wooded environment. This is significant since anthropologists had long believed the genus Homo habilis — which eventually evolved into modern humans — made the first tools 2.6 million years ago as a way of retrieving new food sources more efficiently after a climate change caused forests to become savannas.

The revelation that tools were being made 700,000 years before those long thought to have been the oldest — and in an environment opposite that believed to have created the need for tools to begin with — is sending shockwaves through the scientific world, thrusting into doubt much that was once taken as fact. Quinn even recalled telling her Introduction to Anthropology class that all she had taught them throughout the semester could be thrown out the window with this one discovery, which she said thrills her as both an anthropologist and a professor.

“We’re actually rewriting the textbook — how fun is that?” Quinn said in a May 29 phone interview. “This field is very much discovery-driven, and we have to revisit our hypotheses and ideas all the time. And that’s what’s exciting, because I think students feel like they can contribute to that. They themselves could witness this change, and if they choose to go into a field like this, they can make a meaningful contribution to our knowledge.

“I actually enjoy being wrong on a regular basis because that’s when we go, ‘Oh, wait. We thought we knew this. No, we don’t,’” she said. “It’s good because it means that we make discoveries of our own. And she is being aided in this effort by a five-year, $454,000 National Science Foundation Faculty Early Career Development Program Grant that she was recently awarded to benefit her laboratory at Seton Hall. The professor said she will use the money to purchase more equipment to analyze samples, as well as fund a summer program that would allow students to start their own hands-on research projects while helping Quinn with her own work. She said that three-week session — which begins Aug. 3 — will provide invaluable experience to students, allowing them to get a head start on their final thesis projects and giving them the chance to discover what it means to pursue careers in anthropology.

Quinn’s teaching career is not standing in the way of her research work, however. She said she wants to continue her work in the Turkana basin — which she called one of the best places in the world to study the evolution of humans — for many years to come. This anthropologist is particularly eager to keep contributing to the West Turkana Archaeological Project, whose members she said possess the wide range of expertise necessary to uncover the history of the region.

“It’s a nice project to be on,” Quinn said. “Everybody has their own research ideas, but we all come together to create something that is a little bigger than the sum of the parts.”

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Quinn’s discovery changes way we think about ancestors

haven’t figured it all out. There’s so much more to do, and there are so many interesting questions to answer.”

So many questions have indeed been raised by the discovery made by Quinn and the rest of the West Turkana Archaeological Project, which made the cover of the prestigious journal “Nature.” First and foremost is the question of who made the tools, because, as Quinn explained, they were created long before Homo habilis, whose earliest fossils date back 2.8 million years. Then there are the questions of what environmental changes led the makers to construct them, as well as how they were made. After all, she said, the creatures living 3.3 million years ago were ape-like beings without the brain function long-believed necessary to craft such instruments.

But with these questions come theories scientists are already formulating. Quinn said it is possible that Australopithecus afarensis or Kenanthropus platyops, two species believed to be alive at the time the tools were made, could have started experimenting with toolmaking as a way of more efficiently getting food, which she said is the typical reason tools were used. She said that raises the possibility that, instead of toolmaking being the product of the genus Homo, it could have instead been what initiated the rise of modern humanity. On the other hand, perhaps the genus Homo started long before anyone thought, and that anthropologists just have not been able to find the fossils old enough to prove it, she said.

As for her own area of study, Quinn said she looks forward to examining what the discovery says about the environment of that period.

“Do we need a large environmental change to make something happen? Maybe not,” Quinn said. “Maybe these little changes make big changes in terms of who’s successful or not. And having a stone tool may be a way of opening up a new niche.”

In order to answer the many questions on people’s minds, Quinn said it is necessary to hold meaningful conversations on what the tools could mean for the history of humanity. She added that it is also vital to explore and experiment to understand how and why the tools were invented, how they differ from the tools of later generations, and how the environment in which they were made compares to other parts of Africa. This type of work is already being completed by teammates in the project, she said.

Meanwhile, Quinn is training the next generation of anthropologists to one day