

INSTITUTE FOR STUDIES IN PRAGMATICISM

Home
Major Collections
Peirce Society Transactions
Contact Us
Recommended Books
Texas Tech University
Peirce References

Academic Programs
Visiting Scholars
US Patent 6819474
Frequently Asked Questions
Peirce Links
Support the Institute
Recent Collection Additions

Institute Staff
Institute Publications
Peirce's *Century Dictionary* Words
Publicity
Texas Tech University Libraries
Institute News
NEW Published Works of C.S. Peirce

US Patent 6819474 - Quantum Switches and Circuits Peirce / Beil / Ketner

[View the patent \(PDF\)](#)

[View the patent marketing abstract \(2012\)](#)

A Texas Tech University press release about the patent follows below.

TEXAS TECH RESEARCHERS RECEIVE PATENT FOR NEW COMPUTER LOGIC SWITCH

FOR IMMEDIATE RELEASE

Date: March 28, 2005

CONTACT: Scott Slemmons, scott.slemmons@ttu.edu

LUBBOCK - Two Texas Tech investigators have received a patent for a new concept for computer logic switches that could revolutionize computing in the 21st century.

Dr. Kenneth Laine Ketner, Paul Whitfield Horn Professor and director of the Institute for Studies in Pragmaticism at Texas Tech, and Dr. Ralph G. Beil, an institute member, have designed new methods and switches that have been trademarked as Trisistors.

While most of today's computers operate on a binary system, the patent describes a trinary system that includes binary capabilities, but which also supports additional features allowing computers to work faster and more flexibly.

Trisistors and associated methods were inspired in part by the work of an early 20th century physicist, chemist, and logician, Charles S. Peirce. An internationally recognized scientist employed by the U.S. government, Peirce was one of the earliest members of the U.S. National Academy of Sciences.

Credited with early discoveries in computing and artificial intelligence, he referred to his approach in general as Pragmaticism. He developed the theory of signs, a proposal for understanding communication, meaning, logic and intelligence.

"We have shown that Peirce's theory of signs can be applied directly to elementary particle interactions," said Beil, the senior author of the patent. "An aspect of our patent is that elementary particles such as photons and electrons can be used as carriers and processors of information. This is also proposed in previous designs; however, those designs involve multiparticle or parallel states with two (binary) values. Our designs involve single particles or sequential states with possibly more than two values each."

Ketner said the technology can be implemented using current laboratory methods.

"The patent also includes a general procedure for designing future devices," he said. "We refer to this as the PBK (Peirce-Beil-Ketner) Method. We think this approach will facilitate development of additional trinary devices."

Beil emphasized that the patent gives designs for, not the next generation of computers, but the generation after that. Ketner proposes that the PBK method may be useful in the further study and application of artificial intelligence.

A Texas Limited Liability Company, ArisbeTools LLC, has been formed by Texas Tech University, the inventors and supporters. It will hold the patent and other associated intellectual property.

Dr. William Marcy, who holds an interdisciplinary doctorate in engineering and computer science and is provost at Texas Tech University, said the new patented technology will greatly expand the tradeoffs between the quantity of data that can be computed and the speed at which the computation can be made.

"The computing capability of a laptop today could be handled in a device the size of a dime," he said, "and the laptop of the future could have the computing capability of one of today's supercomputers."

Marcy said the research represents the modern-day equivalent to the invention of transistors, which replaced vacuum tubes in electronic devices in the 1960s. From transistors came the integrated circuit technology that drives hundreds of electronic devices now in everyday use.

"I believe that Ketner and Beil have reached that same point in understanding that will lead to a new revolution in electronics," Marcy said. "Imagine where we were in 1960 and then extrapolate to where we are today. That is the significance of this patent."

Beil and Ketner have recently published two articles in The International Journal of Theoretical Physics which show how Peirce's logic applies to the description of single particle quantum states.

-30-

Note: The U.S. Patent No. for the new switch is 6819474

CONTACT: Kenneth Laine Ketner, director of the Institute for Studies in Pragmaticism, Texas Tech University, (806) 742-3128, or e-mail kenneth.ketner@ttu.edu.

Copyright 2002 Texas Tech University System.

All Rights Reserved.

Maintained by: Office of Communications & Marketing

Contact: systemwebmaster@ttu.edu

[System Privacy Statement](#)

[Home](#)