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Can You Crack a Code? Try Your Hand at Cryptanalysis

12/24/09

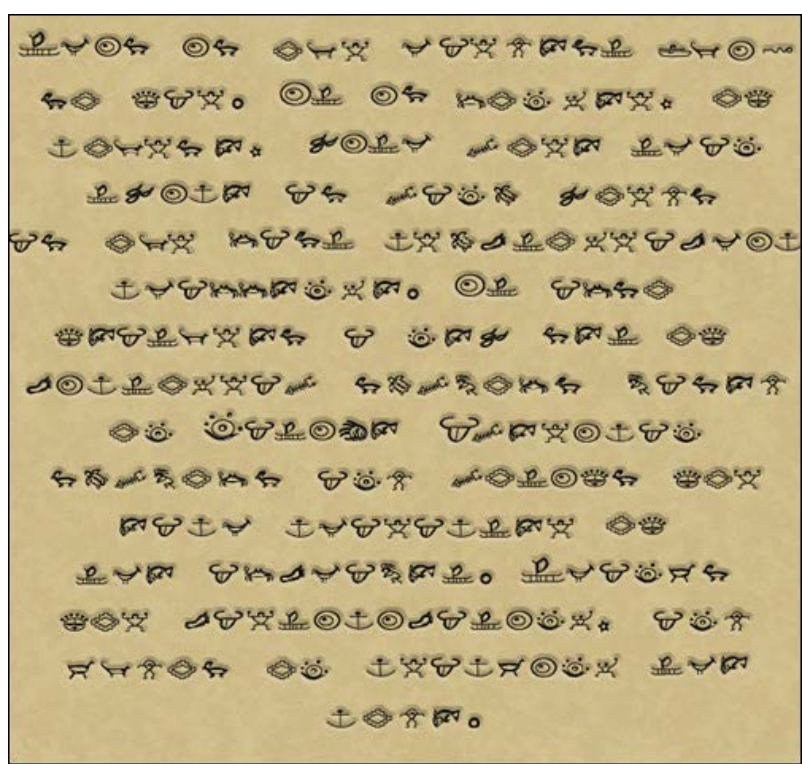
We've challenged you before—in November 2007, December 2008, and May 2009—to unravel a code and reveal its secret message like the "cryptanalysts" in our FBI Laboratory.

In our latest quiz, we've switched gears a bit, using pictogram symbols based on Native American motifs. And with more than 50 words to decipher, it's our longest one so far.

For the first time, we're also posting the answer (see the bottom of this page) in case you are stumped. We ask, however, that you not post the solution on the web so that everyone can have a chance to give it a try.

Once again: If you want a primer on basic cipher systems and how to break them, see the article ". "

Good luck!



Note: Sorry, but cracking this code doesn't guarantee you a job with the FBI! But do check out careers with us at FBIJobs.gov.

The answer

To learn more about code-breaking in the FBI:

- A 400-Year History of Cryptanalysis
- The Zodiac Killer Case
- Cryptanalysis in the FBI Lab

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Can You Crack a Code? Try Your Hand at Cryptanalysis

The answer to the cryptographic reads as follows:

This is our hardest quiz so far. It is longer, of course, with more than twice as many words as our last cryptographic challenge. It also features a new set of pictogram symbols based on Native American symbols and motifs for each character of the alphabet. Thanks for participating, and kudos on cracking the code.

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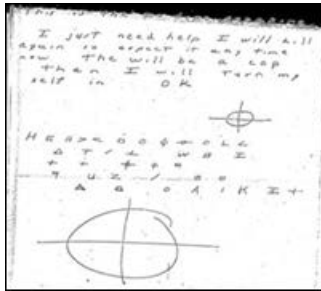
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Code Breakers

A 400-Year History of Cryptanalysis

04/12/06



A coded message of the "Zodiac" serial killer that was broken by a California couple in a few hours.

Ted Kaczynski—the infamous "Unabomber"—used them. So did Russian spies like Rudolf Abel. Not to mention John Wilkes Booth and Mary, Queen of Scots.

We're talking about secret codes and ciphers...used in the commission of crime, espionage, and terrorism.

Find out how law enforcement broke these and other codes with "cryptanalysis" in Code Breaking in Law Enforcement: A 400-Year History in the new issue of Forensic Science Communications. The article was written by one of our own cryptanalysts, Dorn Vernessa Samuel, who works in the Cryptanalysis and Racketeering Records Unit in the FBI Laboratory.

Here are a few of the cases featured:

- **Murder He Wrote.** While in jail awaiting trial for the 2004 murder of an 11-year-old Florida girl, Joseph Peter Smith sent his brother a coded message. Authorities asked us to analyze it, and our cryptanalysts quickly broke the code. It wasn't easy: Smith had replaced letters of the alphabet with a series of number/symbol combinations written from right to left and from the bottom of the page going up. In the letter, Smith made incriminating references to moving the body and hiding evidence, and he was ultimately convicted of the crime.
- **All in the Family.** Code-breaking pioneers Elizebeth Friedman and her husband William were considered the "greatest marriage in the history of cryptology." Elizebeth, a Treasury Department cryptanalyst, unraveled bootleggers' ciphers during Prohibition, solved a Chinese code that broke up an opium smuggling ring (even though she didn't know the language), and helped settle a maritime dispute between the U.S. and Canada (see the article for the interesting details!). A U.S. Army cryptologist who coined the term "cryptanalysis", William decrypted Japanese diplomatic messages during World War II and secret telegrams in the 1924 Teapot Dome Scandal that led to the resignation of top U.S. officials.
- **North versus South.** Both Union and Confederate forces used ciphers during the Civil War. Confederates were less successful in figuring out Union codes, though, and started publishing them in Southern newspapers, imploring readers to break them. John Wilkes Booth and his conspirators supposedly used ciphers as well to coordinate plans to assassinate President Lincoln.

If you want to learn more on the subject of code breaking, including details on basic cipher systems and how to break them, see the article Analysis of Criminal Codes and Ciphers in a previous issue of Forensic Science Communications.

And direct your grade-school children to our Kids' page, which has a secret message to decode for fun.

Resources: The FBI Laboratory

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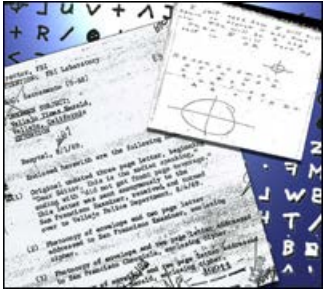
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The Zodiac Killer
View FBI Records on Hunt for Clues

03/02/07



The seemingly random brutal murders of five people in California's Bay Area in 1968 and 1969 and a series of taunting cryptic notes sent by their killer terrorized Northern California for years.

The self-proclaimed "Zodiac Killer" sent local newspapers a three-part coded message explaining his motive for the killings in 1969 and in a separate letter to the editor suggested his identity was buried within an elaborate cipher message. The decoded message did indeed reveal the killer's twisted motive, but his identity remains a mystery.

The unsolved nature of the murders and the Zodiac Killer's elaborate methods of communicating with the public and his

persuers still captures the imaginations of screenwriters, authors, true-crime buffs, forensic scientists, and, of course, law enforcement.

The murders did not fall under federal jurisdiction, so the FBI never opened an investigation. But a glance through the FBI's public records on the case shows how local law enforcement agencies called on the FBI's expertise in handwriting analysis, cryptanalysis, and fingerprints to aid their investigations.

The FBI's role in 1969, much as it is today, was to support local law enforcement in their investigations. In the Zodiac Killer case, correspondence between law enforcement agencies in Northern California and forensic experts at the FBI's Laboratory—in what was then called the Technical Evaluation Unit—shows our efforts to analyze handwriting samples and lift latent fingerprints from the letters and envelopes sent by the purported killer. FBI cryptanalysts, or code-breakers, were also enlisted to unravel a complex cipher that used more than 50 shapes and symbols to represent the 26 letters of the alphabet. Ultimately the code was made public and broken by two university professors.

But then, as now, the case illustrates the extent of partnerships between the FBI and other law enforcement agencies. Here's a look at just some of the ways we support our partners in investigations:

- **Behavioral analysis:** Local police call on the FBI profilers, or behavioral analysts, at the FBI Laboratory for help and advice when leads in their criminal cases turn cold or fray into infinite possibilities. [Read more about it.](#)
- **Fingerprint analysis:** Our Integrated Automated Fingerprint Identification System is the largest biometric database in the world, containing the fingerprints and corresponding criminal history information for more than 47 million subjects. [Read more about it.](#)
- **Criminal Background Checks:** More than 90,000 agencies are connected to the FBI's massive computerized database of fingerprints, mugshots, crime records, and parole and probation information. We run the "host computer" at our Criminal Justice Information Services facility in West Virginia. [Read more about it.](#)
- **Cryptanalysis:** Code-breakers at the FBI Laboratory analyze and decipher codes used in used in the commission of crimes, including kidnappings, gang communications, espionage, and terrorism. [Read more about it.](#)

The records in the Zodiac case, meanwhile, are just a sample of what is available for your review in our Electronic Reading Room, which contains thousands of records, including our probes of famous persons, available through the Freedom of Information Act.

Resources:
 - [Research FBI Records & Information](#)
 - [FBI Laboratory](#)

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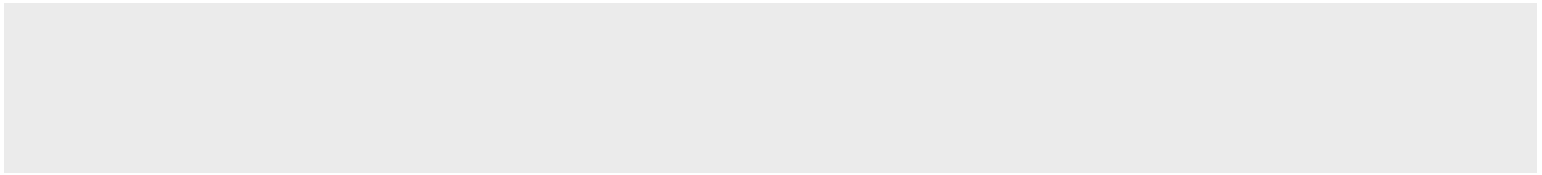
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Cryptanalysis and Racketeering Records

Mission

The Cryptanalysis and Racketeering Records Unit (CRRU) examines both manually encrypted documents and records of illegal enterprises, as well as provides expert testimony and other forensic assistance to further identify terrorism, foreign intelligence, and criminal activities in support of federal, state, local, and international law enforcement investigations and prosecutions.

The Team

Cryptanalysts, cryptanalysts (forensic examiner), and a management and program assistant

The Work

- *Cryptanalysis* - Decrypt manual codes and ciphers found in letters, diaries, ledgers, and other types of written communications, records, and e-mails. Common users of codes ciphers include national and international terrorists, foreign intelligence agents, members, prison inmates, and violent criminals.
- *Racketeering Examinations* - Examine and decode records from illicit businesses, such as loansharking, prostitution, sports bookmaking, and Internet gambling. Such violations are predicate offenses for RICO charges. Examinations may reveal the type of operation, dates of activity, wagering or loan amounts, types of wagers or loans, number and roles of participants, and accounting methods.
- *Drug Records Examinations* - Examine and decode records pertaining to the type of operation, type of drug, quantity of drugs sold or purchased, unit prices, method of payment, transaction dates, roles of participants, gross and net profits, and operating expenses.

The unit members also testify in legal proceedings.

Read a story about the work of our cryptanalysts



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