

the sender and intended recipient, suspects the existence of the message, a form of security through obscurity. The word *steganography* is of Greek origin and means "concealed writing" from the Greek words *steganos* meaning "covered or protected", and *graphein* meaning "to write". The advantage of steganography, over cryptography alone, is that messages do not attract attention to themselves. Plain visible encrypted messages (no matter how unbreakable) will arouse suspicion, and may in themselves be incriminating in countries where encryption is illegal. Therefore, whereas cryptography protects the contents of a message, steganography can be said to protect both messages and communicating parties. Steganography includes the concealment of information within computer files. In digital steganography, electronic communications may include steganographic coding inside of a transport layer, such as a document file, image file, video file, audio file, program or protocol. Media files are ideal for steganographic transmission because of their large size. As a simple example, a sender might start with an innocuous image file and adjust the color of every 100<sup>th</sup> pixel to correspond to a letter in the alphabet, a change so subtle that someone not specifically looking for it is unlikely to notice it.

Steganography gives wide abilities for communication; in fact it allows you to hide any file in another file so that no one knew. Unfortunately, this

technology is not always used with good intentions. According to many information agencies terrorists of Al-Qaeda used steganography to prepare for the September 11 attacks.

Rumors about terrorists using steganography started first in the daily newspaper *USA Today* on February 5, 2001 in two articles titled "Terrorist Instructions Hidden Online" and "Terror Groups Hide behind Web Encryption". In July 2001, an article was titled even more precisely: "Militants Wire Web with Links to Jihad". According to this article Al-Qaeda operatives sent hundreds of encrypted messages hidden in files on digital photographs on the auction site *eBay.com*. Other worldwide media cited these rumors many times, especially after the terrorist attack of September 11, without ever showing a proof. The Italian newspaper *Corriere della Sera* reported that an Al-Qaeda cell which had been captured at the Via Quaranta mosque in Milan had pornographic images on their computers, and that these images had been used to hide secret messages (although no other Italian paper ever covered the story). The *USA Today* articles were written by veteran foreign correspondent Jack Kelley, who in 2004 was fired after allegations emerged that he had fabricated stories and sources.

In October 2001, the *New York Times* published an article claiming that al-Qaeda had used steganography to