

## **DOCUMENT SECURITY A HISTORICAL PERSPECTIVE**

The need for effective document security in combating fraud and forgery has been in existence since the early beginnings of social trade and commerce. In Mesopotamia as early as 8000 BCE, geometrically shaped bits of fire-hardened clay were used as a primitive accounting system for computation and record keeping. Initially the referent of these clay 'tokens' was simple: One token for one object and differently shaped tokens used for different objects. The biggest problem faced with this accountancy system was how could one secure, then guarantee, the accuracy and authenticity of stored tokens. Tokens kept on a string or in a bag could be tampered with and since clay was readily available, the outright addition of forged tokens would be easy. In order to resolve this problem clay envelopes were created in order to secure the tokens. These envelopes were generally shaped as a ball and known as 'bullae'. After the tokens were placed inside, the bulla would be sealed and impressions made on the outer surface, these impressions would correspond to the contents. When goods were being dispatched, a sealed bulla would have acted like a modern day bill of lading. With the marks outside of the clay, it would be possible to check the contents without having to break the bulla. In the event of a dispute and since the outer impressions would not have been as secure from tampering, the bulla could be broken and the contents checked against the merchandise.

From these early markings to the beginning of writing and throughout the development of today's document systems, people have been trying to fraudulently obtain money and power or affect our knowledge of events and history by forging the principle means by which such information is conveyed or presented to us. In fact the very history of our world is complicated by both literary and historical forgeries. The Donation of Constantine was one such forgery which had a major effect on history. This document was purportedly in the hand of the Roman emperor Constantine I, who converted to Christianity in A.D. 312. According to the document, Constantine was giving the pope dominion over Rome and "all provinces, localities and towns in Italy and the western hemisphere." Thus with the discovery of this document, Constantinople's threat to reduce the importance of Rome and the papacy in the eighth century was abruptly halted. When this document was produced by Pope Stephen II in A.D. 754, he was elevated to a position of dominating Constantinople, which otherwise would have been the other way around. This document gave great authority to the papacy for seven hundred years and was not shown to be a forgery until the fifteenth century.

The crime of counterfeiting took a real leap forward from two important points in the history of documents and graphic arts, one in the seventh century with the advent of paper-based documents of value and the other in 1455 with the birth of typography. As we evolved into a paper society the widespread instances of counterfeiting and forgery made document security essential. The beginning of printing securities can be traced to Napoleon's occupation of the lowlands and to the foundation of National Banks. It began in the mid 18<sup>th</sup> century when Joh. Enschedé and sons commissioned the typeface designer Fleischmann to create a special typeface depicting musical notes. Then in the early years

of the 19<sup>th</sup> century when Holland was occupied by the French under Napoleon, he introduced the so-called 'assignats', a kind of paper money. Because some document security was needed to prevent counterfeiting, the old music type font of Fleischmann was revived and used as a printed border on the new money. Since no one else had access to those particular music types at the time it made for an effective security feature.

This kind of early black and white print security was relatively effective until the introduction of photography, where it then became possible to make copies of the printed form. Suddenly printing could be copied on a large scale and counterfeiting with the new photographic technology threatened the printing of secure documents. The security printer of the time then circumvented this type of forgery reproduction by the simple introduction of colour into the printing process. But four-colour print technology had been around long before photography had come about, so another prevention method would be needed. So in the middle of the 19<sup>th</sup> century the guilloche machine, named after the Frenchman Guillot, was introduced as a new and advanced method of security printing technology. A guilloche machine was a geometric lathe with a mechanical arrangement of gears and drives that worked to engrave complex patterns on film or glass plates. These intricately interwoven patterns were difficult to copy thus thwarting the efforts of most counterfeiters.

The many advances and technological changes in the graphic arts has continually fueled a battle between the technology of reproduction and the security printers craft.

Understanding the main objective of the counterfeiter and the handling environment of a security document will determine what type of security features should be incorporated and what type of crime the document will be exposed to. For the most part, counterfeiters only want to reproduce a document well enough for a first transaction to take place. They are usually not concerned with secondary transactions and rarely care if the document is eventually identified as a counterfeit. Further, most criminals will prefer to alter a genuine document rather than reproduce a complete counterfeit. This facilitates more chances for successfully passing the document by authorities because they have altered only a small portion of a document and have left the bulk of its authentic features in place. This type of simple alteration forgery is the most common and is often found in forged identification documents or on financial negotiables such as the amount payable on a cheque.

Widespread instances of forgery and counterfeiting by organized crime is a major worldwide problem. Yearly damages due to document fraud such as counterfeit credit card scams and immigration forgery reach into the billions of dollars. Creating new identities for illicit migration is big business. From drug trafficking to terrorism, the passing of forged travel documents like birth certificates, driver's licences, passports, visas, work permits, etc. is the key element in illegal migration. Immigration and border control agencies annually report that 30% to 50% of all questioned travel documents prove to be fake.

Like any other security survey the assessment of document security against counterfeiting and forgery must start with a complete threat analysis. What and where is the problem? how big is the problem? which documents are being altered or reproduced? And what techniques are being used by the forger? A companies approach to document forgery and counterfeit prevention must consider not only technical security solutions in the production of new documents but also a sound organizational commitment in the control and issue of documents.

Counterfeiting should not be a new threat which corporate security departments know very little about. Effective security will involve the cooperation of both the security document manufacturer and the documents issuing authority in interpreting forensic statistics which identify the objective of the forger. Awareness and understanding of existing or expected document forgery issues will result in the definition of a document security policy, with clear objectives and proven strategies.

At the dawn of the new millennium today's security practitioner, like those of ancient times, will have to make certain modifications intended to mitigate the threat of counterfeiting and forgery. For the manipulation of today's clay tokens with something as simple as desktop publishing, has the potential of becoming a monumental problem for law enforcement and private security in the future.

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