

Kryptos 5 - Challenge 2: Solution

Challenge 2 was enciphered using a simple monoalphabetic substitution cipher. The spacing was preserved on the handwritten document which is a big help in deciphering.

The tricky part was that while some symbols were substituted for letters, certain symbols were used in more than one substitution, and some letters were replaced by a pair of symbols. For example: a “<” represented one letter and “<<” represented another so it might have been hard to tell if “<<” was a double “<” or a single “<<”. The ?T represented only one letter instead of two. So first one had to determine at least most of the substitution alphabet. Since spacing was preserved this could generally be determined by careful examination of the spacing, and, once some letters were known, the context of the message.

A frequency analysis on the ciphertext gives the following as the most frequently occurring symbols:

< (by far the most frequent) followed by %, ///, ~, x

There are many website such as <http://scottbryce.com/cryptograms/stats.htm> which give statistics on things such as the most frequently occurring letters in English text, the most frequent double letters, those most likely to begin or end a sentence, the most frequently occurring three letter words, etc.

Starting with the simple fact that the most frequently occurring letter is “e”, we can make the guess that “<” represents “e” and go from there. Using the frequency analysis and statistics about letters and words we can begin making guesses. Once some letters are placed, it becomes easier to continue guessing as words emerge. Some observations that might help one with the solution:

- “~” appears as a single word, so it is likely “a” or “i”
- “%p<” occurs frequently, it may be the word “the”
- A two-letter word beginning with “t” is probably “to”

The final plaintext is (punctuation added from context):

Stolen art is secured. We will meet when Amelia has safely left the country with the goods. Time and location will be sent in a separate message. Do not, I repeat do not reveal the code word to Mickey. We believe him to be working for the police, but do not expose our suspicion. We will change our enciphering technique in future messages to use the ragbaby cipher.

The substitution cipher used was:

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
x	k	?	?T	<	Q	rR	p	~	n/a	V	F	f	<<	///	/
Q	R	S	T	U	V	W	X	Y	Z						
m	t	Y	%	5	h	B	b	%M	n/a						