



Modern Frequency Analysis I

Frequency orderings:

eaoidhnrstuyfcglmwbkpxz E.A. Poe, 1843

etaonirshdlucmpfywgbvjkqzx Kahn, 1967

Frequency counts:

a	8.04%	
b	1.54%	
c	3.06%	(Meyer-Matyas)
d	3.99%	
e	12.51%	
...		



Modern Frequency Analysis II

Frequency cliques:

{e} {t} {aoin} {srh} (high)

{ld} {cumf} {pgwyb} (medium)

{vk} {xjqz} (low)

Word Frequencies:

the of and to a in that it is I for as with was his he be ...



Modern Frequency Analysis III

Word frequencies:

the of and to a in that it is I for as with was his he be ...

Frequent bigrams:

th he an in er re on es ti at st en or nd to nt ed is ar

Frequent trigrams:

the ing and ion tio ent ere her ate ver ter tha ati for



Modern Frequency Analysis IV

Other helpful information:

- a, i, and o avoid contact with the exception of io
- n tends to be preceded by a vowel
- h occurs often before e, but rarely after it
- vowels have more contact with other letters than consonants

For cryptograms with word divisions:

- t, o, s are frequent both as first and last letters
- a, i, h are frequent as first, but not last letters
- e, n, r are frequent as last, but not first letters



Dancing Men and Golden Bugs

In "Sherlock Holmes and the Dancing Men" Holmes is confronted with a graphical substitution cipher,



53‡‡‡305))6*:4826)4‡.)4‡);806*:48†8¶
 60))85:]8*.:‡*8†83(88)5*†; 46(;88*96* Cryptogram from
 ?;8)*‡(;485);5*†2.*‡(;4956*2(5*-4)8¶ Poe's "The Gold
 8*; 4069285);)6 †8)4‡‡;1(‡9;48081;8:8‡ Bug".
 1;48†85;4)485†528806*81(‡9;48;(88;4(
 ‡?3 4;48)4‡;161;:188;‡?;
