

KDCY LQZKTLJKX CY MDBCYJQL: "TR

HYD FKXC, FQ MKX RLQQIQ HYDL

MKL DXCTW RDCDLQ JQMNKXTMB

PTBMYEQL K FKH CY LQZKTL TC."

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A  
B 3  
C 8  
D 7  
E 1  
F 3  
G  
H 3  
I 1  
J 3  
K 10  
L 10  
M 6  
N 1  
O  
P 1  
Q 10  
R 3  
S  
T 7  
U  
V  
W 1  
X 5  
Y 7  
Z 2

• • • •  
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A  
B 3  
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E 1 .  
F 3 .  
G  
H 3 .  
I 1 .  
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K 10 ##### V  
L 10 ##  
M 6 #  
N 1 .  
O  
P 1 .  
Q 10 ##### V  
R 3 .  
S  
T 7 ### V  
U  
V  
W 1 .  
X 5  
Y 7 #### V  
Z 2 .

a .a .a .

KDCY LQZKTLJKX CY MDBCYJQL: "TR

. .a . a . .

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a . . .a

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. . a .a .a

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a e.a .a .e .

KDCY LQZKTLJKX CY MDBCYJQL: "TR

. .a .e a . ee.e .

HYD FKXC, FQ MKX RLQQIQ HYDL

a . . e .e .a

MKL DXCTW RDCDLQ JQMNKXTMB

. .e a .a. e.a

PTBMYEQL K FKH CY LQZKTL TC."

A	
B	3
C	8
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H	3 .
I	1 .
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L	10 ##
M	6 #
N	1 .
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U	
V	
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Z	2 .

a e .ao .a .e o .

KDCY LQZKTLJKX CY MDBCYJQL: "TR

. .a .e a . ee.e .

HYD FKXC, FQ MKX RLQQIQ HYDL

a o . . e .e .a o

MKL DXCTW RDCDLQ JQMNKXTMB

.o .e a .a . e .ao o

PTBMYEQL K FKH CY LQZKTL TC."

human "language model"  
doesn't like **ao** – back up!

A	
B	3
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U	
V	
W	1 .
X	5
Y	7 #### V
Z	2 .

a o e.a .a o o.e .

KDCY LQZKTLJKX CY MDBCYJQL: "TR

.o .a .e a . ee.e .o

HYD FKXC, FQ MKX RLQQIQ HYDL

a . . e .e .a

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. o.e a .a. o e.a

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U	
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Z	2 .



a o re.a r.a o o.e f  
KDCY LQZKTLJKX CY MDBCYJQL: "TR

.o .a .e a freeze .o r  
HYD FKXC, FQ MKX RLQQIQ HYDL

ar . f re .e .a  
MKL DXCTW RDCDLQ JQMNKXTMB

. o.er a .a. o re.a r  
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A	
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. o.er a .a. o re.a r  
**PTBMYEQL K FKH CY LQZKTL TC."**

frequent cipher letters: ~~Q~~ ~~L~~ ~~K~~ C D T M ~~X~~ X  
frequent English letters: ~~e~~ t ~~o~~ ~~a~~ n i ~~r~~ s h

A	
B	3
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K	10 ##### V
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R	3 .
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U	
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W	1 .
X	5
Y	6 #### V
Z	2 .

a no re.air.a no no.e if  
**KDCY LQZKTLJKX CY MDBCYJQL: "TR**

.o .a n .e a freeze .o r  
**HYD FKXC, FQ MKX RLQQIQ HYDL**

ar ni. f n re .e .a i  
**MKL DXCTW RDCDLQ JQMNKXTMB**

.i o.er a .a. no re.air in  
**PTBMYEQL K FKH CY LQZKTL TC."**

frequent cipher letters: ~~Q~~ ~~L~~ ~~K~~ C D T M ~~Y~~ X  
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Y	6 #### V
Z	2 .

a to re.air.a to to.e if  
**KDCY LQZKTLJKX CY MDBCYJQL: "TR**

.o .a t .e a freeze .o r  
**HYD FKXC, FQ MKX RLQQIQ HYDL**

ar ti. f t re .e .a i  
**MKL DXCTW RDCDLQ JQMNKXTMB**

.i o.er a .a. to re.air it  
**PTBMYEQL K FKH CY LQZKTL TC."**

frequent cipher letters: ~~Q~~ ~~L~~ ~~K~~ ~~C~~ D ~~T~~ M ~~Y~~ X  
frequent English letters: ~~e~~ ~~t~~ ~~o~~ ~~a~~ n ~~i~~ ~~r~~ s h

A	
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a to repair.a to to.e if  
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auto repairman to customer: if  
**KDCY LQZKTLJKX CY MDBCYJQL: "TR**

you wait we can freeze your

**HYD FKXC, FQ MKX RLQQIQ HYDL**

car until future mechanics

**MKL DXCTW RDCDLQ JQMNKXTMB**

discover a way to repair it

**PTBMYEQL K FKH CY LQZKTL TC."**

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These slides  
are from a talk  
by Kevin Knight

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How could a machine do this?  
That's classified!

