Morse Code and Cryptography

Morse code Transmission

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A ● ▬        U ● ● ▬
B ▬ ● ● ●    V ● ● ● ▬
C ▬ ● ▬ ●    W ● ▬ ▬
D ▬ ● ●      X ▬ ● ● ▬
E ●          Y ▬ ● ▬ ▬
F ● ● ▬ ●    Z ▬ ▬ ● ●
G ▬ ▬ ●
H ● ● ● ●
I ● ●
J ● ▬ ▬ ▬
K ▬ ● ▬      1 ● ▬ ▬ ▬ ▬
L ● ▬ ● ●    2 ● ● ▬ ▬ ▬
M ▬ ▬        3 ● ● ● ▬ ▬
N ▬ ●        4 ● ● ● ● ▬
O ▬ ▬ ▬      5 ● ● ● ● ●
P ● ▬ ▬ ●    6 ▬ ● ● ● ●
Q ▬ ▬ ● ▬    7 ▬ ▬ ● ● ●
R ● ▬ ●      8 ▬ ▬ ▬ ● ●
S ● ● ●      9 ▬ ▬ ▬ ▬ ●
T ▬          0 ▬ ▬ ▬ ▬ ▬
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Do the following:

-Using Morse code, encode a message (but don't tell your partner what it is!).
-Using a flashlight, transmit the message to your partner from across the room.
-Your partner will decode the message and formulate a response.
-Encode the response the same way and transmit it back to the other side.
-Decode the message.

Questions:
-How accurate was your relay of messages? What was the biggest challenge?

-How could you improve your transmission?

-Why do you think Morse code is still used today?

-Read Morse's chart from when he developed the code (http://www.loc.gov/resource/mmorse.012001/?sp=154). Developed for the telegraph, what factors do you think influenced Morse's patterns?

More Codes and Cryptography

        Encryption and ciphers have a long history, whether a simple substitution code, or the codes generated by the Enigma machine. Today, encryption and coding are a prominent part of life, dominating social and technical conversations.

        Ciphers can even be found in the early documents of America. James Madison was one of many Founding Fathers to use codes in his correspondence. Examine the letter to Edmund Randolph (1782). http://loc.gov/resource/mjm.01_0744_0745/?sp=1

        Many of the messages relayed were based on a code developed by James Lovell (http://loc.gov/resource/mjm.01_0627_0629/?sp=1).

Why would Madison and Randolph have wanted to use a code to communicate?

Read about some of the ciphers used prior to 1910 here.

Now examine the book "Ciphers for the Little Folks."
https://archive.org/stream/ciphersforlittle01crai#page/n0/mode/2up Much like Morse code, the system relies on binary values (a/b or 1/0). Using the key at the beginning of the book:
-Using the "Ciphers" code, encode a message (but don't tell your partner what it is!).
-Give the message to your partner.
-Your partner will decode the message and formulate a response.
-Encode the response the same way and transmit it back to the other side.
-Decode the message.

What is the advantage of using binary (2) values instead of more in a code? Disadvantages? (Think of other codes like semaphore, substitution, etc.)

What other ways do we use binary values in codes today?