

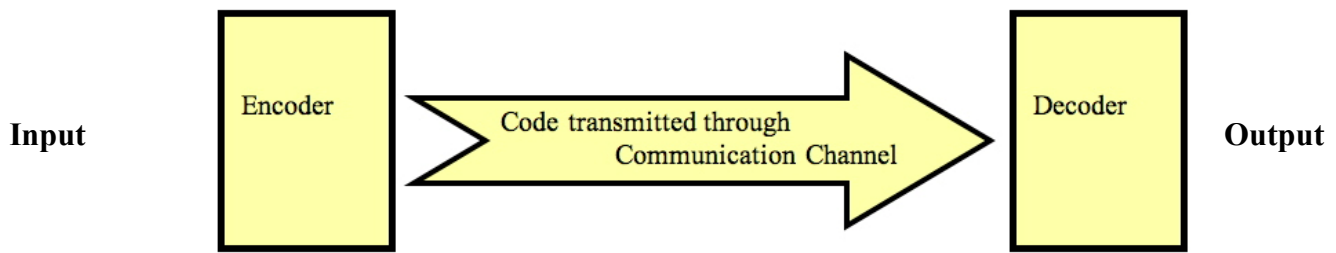
Cosmic Fingerprints Application for Naturally Occurring Code

Cosmic Fingerprints invites scientists and the public to demonstrate the origin of a naturally occurring code and will assist in the publicizing the discovery of the same. The following specification defines the criteria for identifying a naturally occurring code:

1. The submitted system cannot be designed by a human, since we are seeking a system that is naturally occurring.
2. Since the origin of DNA is unknown, the submitted system cannot be a direct derivative of DNA or produced by a living organism. Bee waggles, dogs barking, RNA strands and mating calls of birds don't count. Such codes are products of animal intelligence, genetically hard-coded and/or instinctual.
3. The origin of the submitted system must be documented such that its process of origin can be duplicated in a real-world laboratory according to the scientific method.
4. The submitted system must be digital, not analog.
5. The submitted system must have the three integral components of communication functioning together: encoder, code, decoder.
6. The message passed between encoder and decoder must be a sequence of symbols from a finite alphabet.
7. A symbol is a group of k bits considered as a unit. We refer to this unit as a message symbol m_i ($i=1, 2, \dots, M$) from a finite symbol set or alphabet. The size of the alphabet M is $M = 2^k$ where k is the number of bits in the symbol. For a binary symbol, $k = 1$, $M = 2$. For a quaternary symbol, $k = 2$, $M = 4$.
8. A character is a group of n symbols considered as a unit. We refer to this unit as a message character c_i ($i=1, 2, \dots, C$) from a finite word set or vocabulary. The maximum size of the character set c is $C = M^n$. For a standard computer byte, $M = 2$, $n = 8$. For a triplet group of quaternary symbols, $M = 4$, $n = 3$.
9. The submitted system must be labeled with values of both encoding table and decoding table filled out.
10. For the submitted system, it must be possible to objectively determine whether encoding and decoding have been carried out correctly. For example when you press the "A" key on the keyboard, a letter "A" is supposed to appear on the screen and there is an observable correspondence between the two. In DNA, a Y chromosome (made from a specific sequence of nucleotides) should correspond to male, and an X chromosome should correspond to female. For any given system, a procedure should exist for determining whether input correctly corresponds to output.

Application Instructions

i. For the submitted communication system, please label the components within the following system – encoder, communication channel and decoder:



ii. Create tables similar to the below and fill out both columns for each:

Encoding Table	
Input	Encoded Message

Decoding Table	
Encoded Message	Output

Example diagrams and encoding/decoding tables for ASCII and DNA are provided at <http://www.cosmicfingerprints.com/blog/solve/>

iii. Define k , the number of bits considered as a unit, and the alphabet M per item #7 above.

iv. Define n , the number of symbols considered as a unit to create the character set c . Define the character set and the number of characters C per item #8 above.

v. The origin of the submitted system must be clearly documented such that results can be duplicated in the laboratory and/or observed independently.

vi. Please include name, phone number, website, email address and physical address on a separate page from your submitted data. Your name, website, city province and country will be made public along with your submission.

vii. To submit your application, go to <http://www.cosmicfingerprints.com/blog/bio/> and submit a support ticket via the Media Contact Form. You can also FAX your application to (760)284-5920. You should receive an email confirmation that your application has been received within 72 hours.

viii. All submissions are publicly posted for all to see, together with a formal response to each submission. All submissions received to date are posted at the page <http://www.cosmicfingerprints.com/blog/submissions/>