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# Steganographie

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L'ART DE DISSIMULER DES DONNÉES

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Matthieu Meurant



STEGANOS = COUVERT  
GRAPHEIN = ÉCRIRE



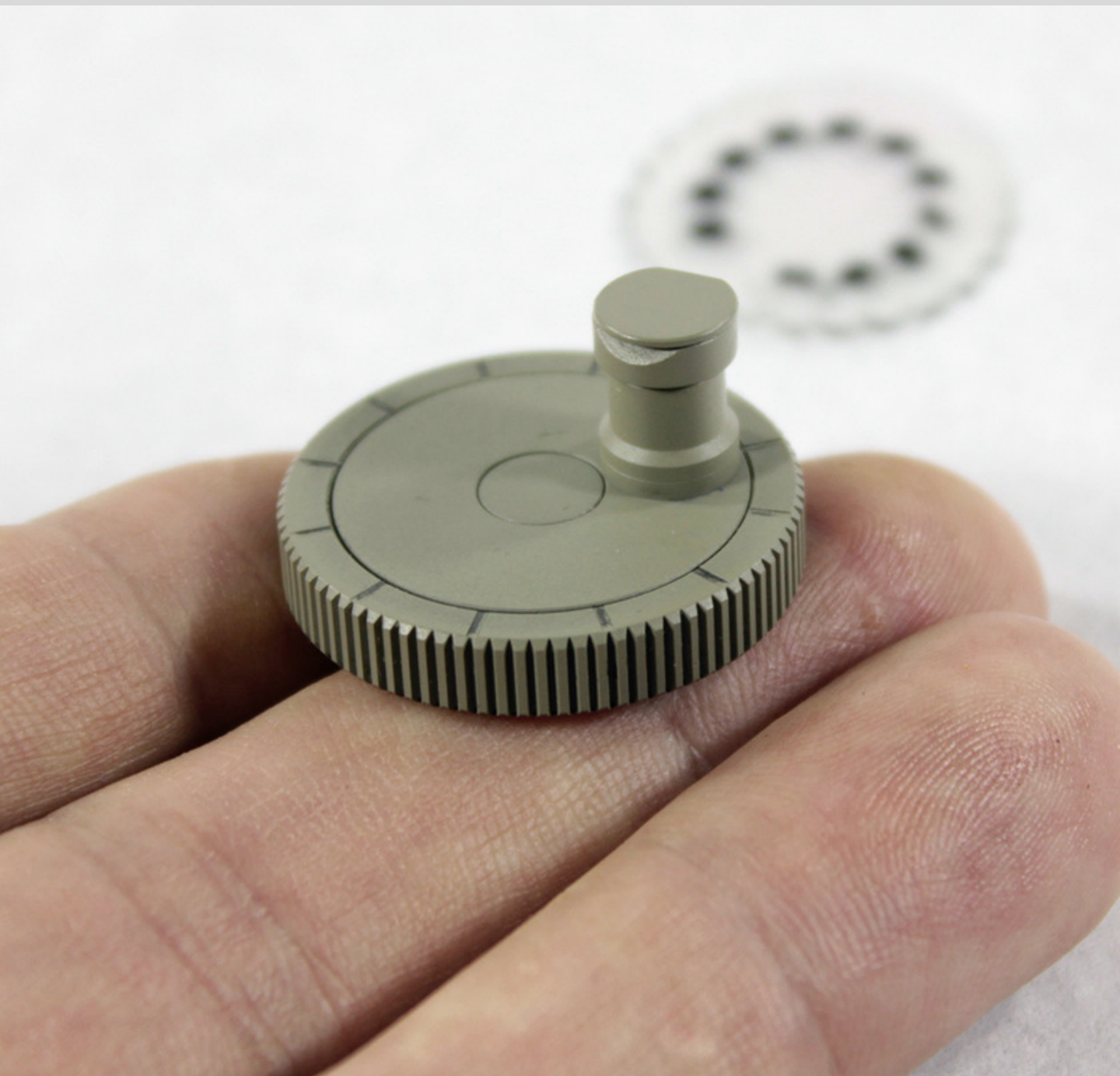
Alfred de Musset

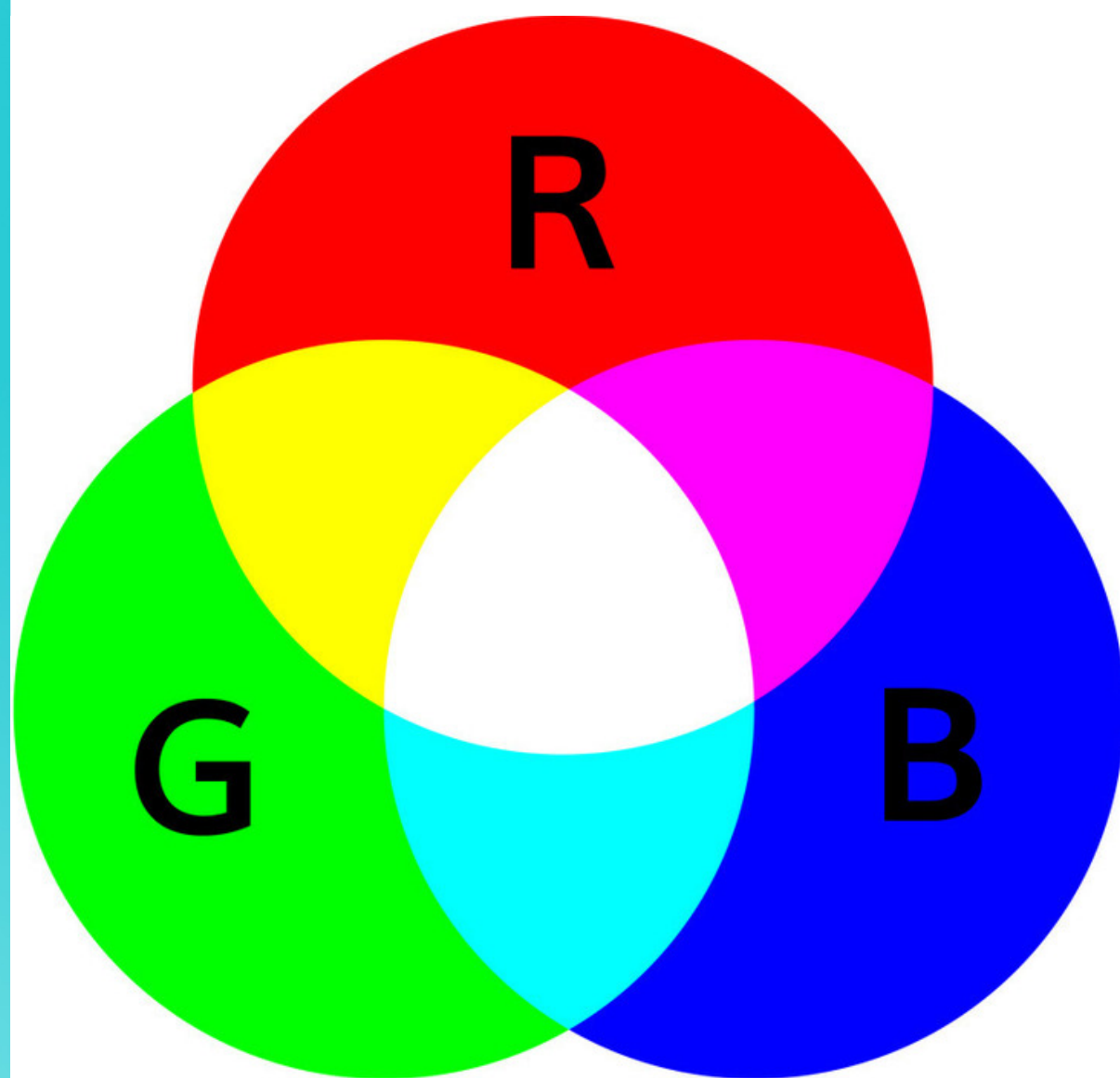
George Sand



# So many ways

## Microdot





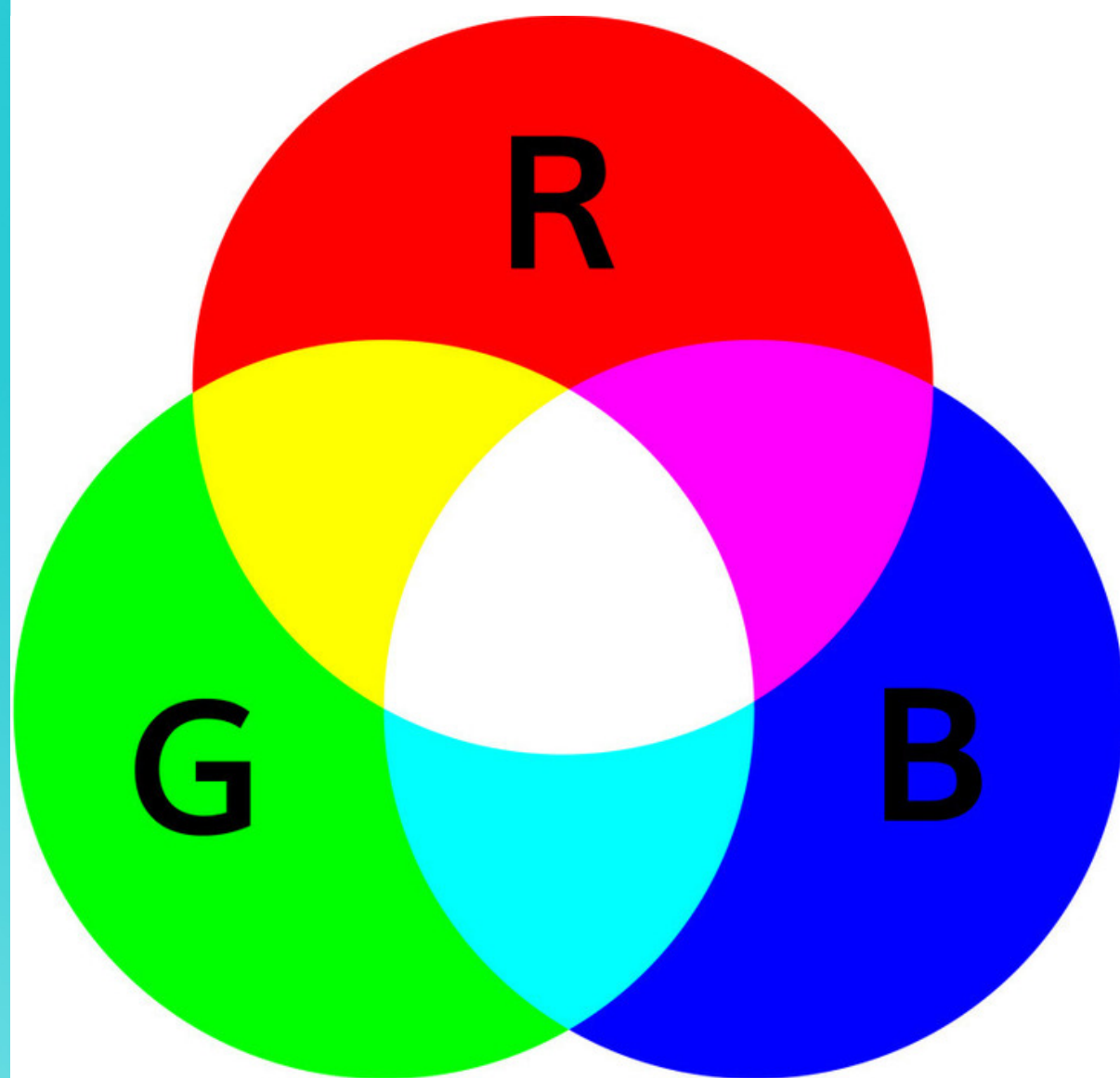
R = 1 1 0 1 1 0 1 X

G = 1 0 0 1 0 1 1 X

B = 1 0 0 1 0 1 0 X

LSB





R = 1 1 0 1 1 0 1 X

G = 1 0 0 1 0 1 1 X

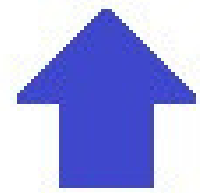
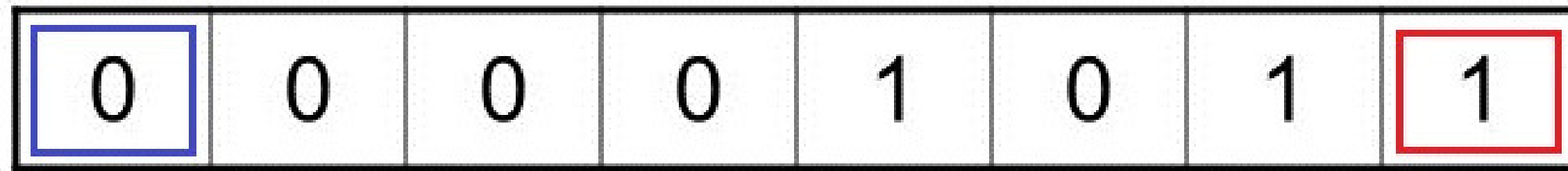
B = 1 0 0 1 0 1 0 X

LSB

RGB:  
40 150 255

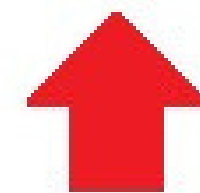
RGB:  
40 150 254

# LSB



MSB

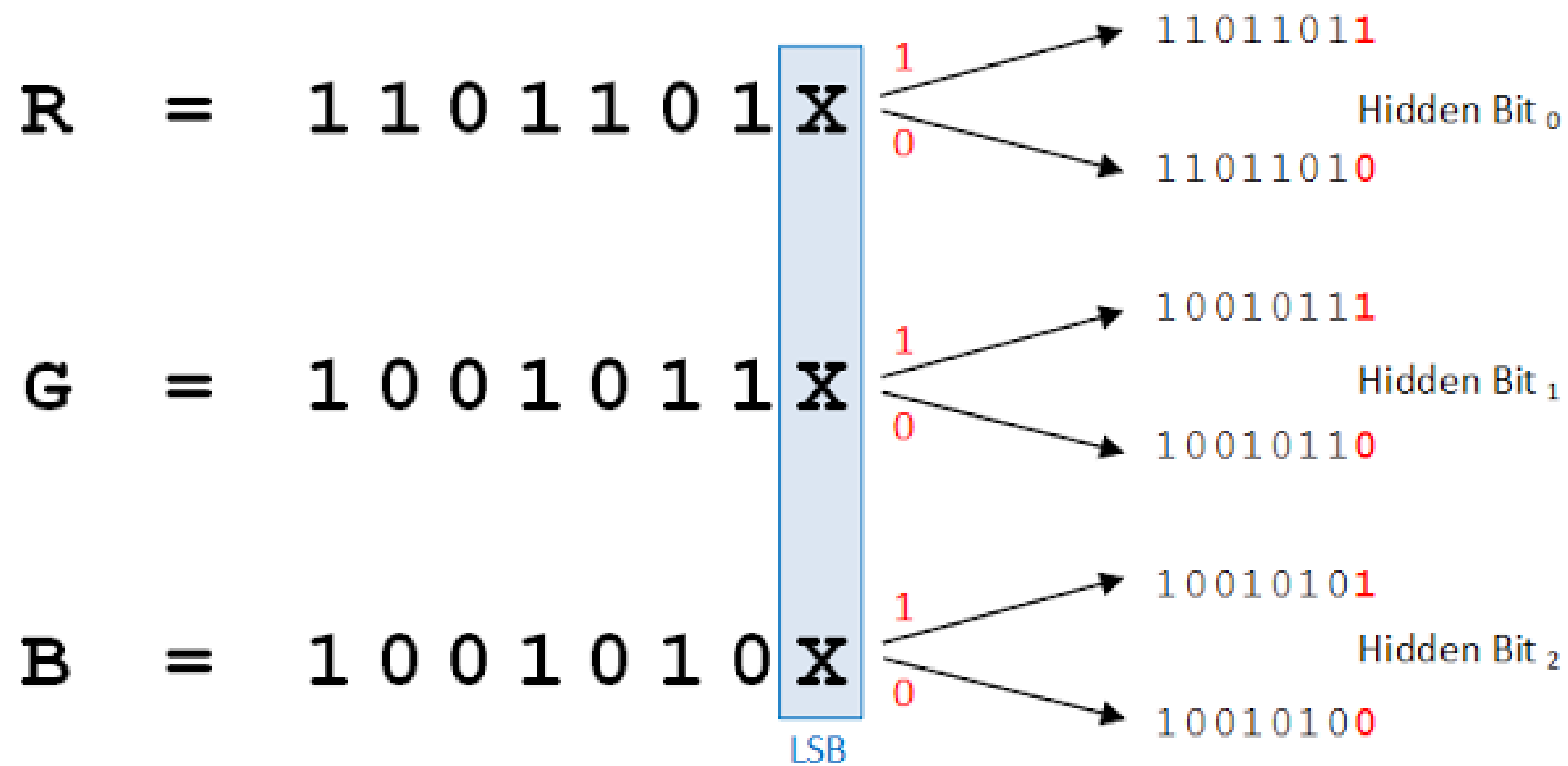
(Most significant bit)

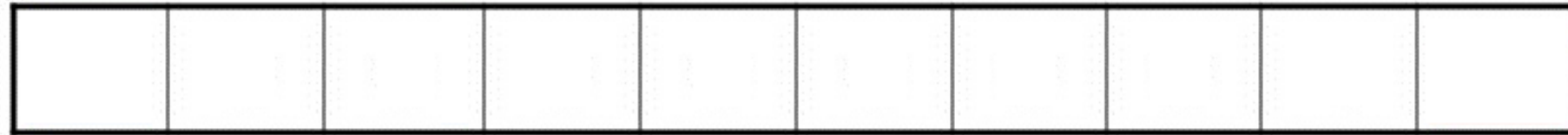


LSB

(Least significant bit)







1 \* 10px

"A" = 65 = 01000001

"B" = 66 = 01000010

0	R: 1111111 <b>0</b> G: 1111111 <b>1</b> B: 1111111 <b>0</b>
1	R: 1111111 <b>0</b> G: 1111111 <b>0</b> B: 1111111 <b>0</b>
2	R: 1111111 <b>0</b> G: 1111111 <b>1</b> B: 1111111 <b>0</b>
3	R: 1111111 <b>1</b> G: 1111111 <b>0</b> B: 1111111 <b>0</b>
4	R: 1111111 <b>0</b> G: 1111111 <b>0</b> B: 1111111 <b>1</b>
5	R: 1111111 <b>0</b> G: 11111111 B: 11111111
6	R: 11111111 G: 11111111 B: 11111111



**SIGNATURE**

**HEADER**

**MESSAGE**

**FOOTER**

## SIGNATURE

◆	!	#	R	S	T	G	#
255	33	35	82	83	84	71	35

## HEADER

■	■	■	#
?	?	0/128	35

## MESSAGE

## FOOTER

#	◆
35	3

11111111	00100001	00100011	01010010
01010011	01010100	01000111	00100011
00000000	00000010	00000000	00100011
01000001	01000010	01100011	00000011



# Sources stéganographie

- <https://www.securiteinfo.com/attaques/divers/steganographie.shtml>
- <http://www.nymphomath.ch/crypto/stegano/index.html>
- <http://www.ray0.be/steganosaurus/more.html>
- <http://bcs.fltr.ucl.ac.be/FE/08/stegano.htm>

## Liens utiles

- <https://www.securityondemand.com/news-posts/insider-uses-steganography-steal-trade-secrets-china/>
- <https://securityaffairs.co/wordpress/62191/malware/synccrypt-ransomware.html>
- <https://www.depotnumerique.com/outils/steganographie/cacher-du-texte.php>
- <http://www.nymphomath.ch/crypto/stegano/barncode.html>