

## Cipher Machines

October 12, 2010

## ADFGVX Cipher

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	A	D	F	G	V	X
A	8	p	3	d	1	n
D	l	t	4	o	a	h
F	7	k	b	c	5	z
G	j	u	6	w	g	m
V	x	s	v	i	r	2
X	9	e	y	0	f	q

Plain	p	a	i	n	v	i	n
Cipher	AD	DV	VG	AX	VF	VG	AX

## ADFGVX Cipher

Plain	p	a	i	n	v	i	n
Cipher	AD	DV	VG	AX	VF	VG	AX

Z	I	P
A	D	D
V	V	G
A	X	V
F	V	G
A	X	

I	P	Z
D	D	A
V	G	V
X	V	A
V	G	F
X		A

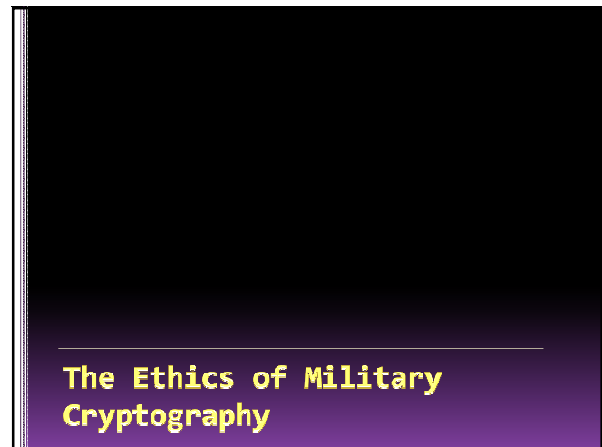
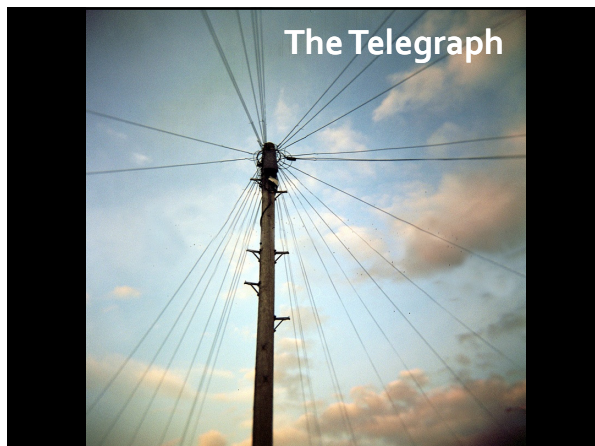
DDAVGVXVAVGFXA



Georges Painvin  
(1886 – 1980)

## Reading Question 3

- Given the various incidents recounted in this chapter, what are some conditions that seem favorable to the advancement of military cryptography?
- New technologies (e.g. radio)
  - Easily intercepted messages (e.g. no landlines)
  - Anxiety, incentive of not dying
  - Being on the defensive
  - Failure of old systems
  - Fresh ideas (drafting new minds into the effort)



### Reading Question 1

When the Zimmerman telegram was deciphered by the cryptanalysts of Britain's Room 40, Admiral William Hall decided not to tell American President Woodrow Wilson about its contents because doing so might let the Germans know that Britain was capable of breaking their codes. Given the danger posed to America by the unrestricted U-boat warfare indicated in the telegram, was this ethical of Admiral Hall?

This was a tough decision, but I think it was an ethical one.	I think it was ethical...
I think that it was an ethical decision...	Yes, Admiral Hall's decision was ethical...
I think this was an ethical decision on Admiral Hall's part...	I think Admiral Hall's decision was ethical.
...In the end I believe he chose the lesser of two evils by keeping Room 40 a secret.	I think he was acting in the best interest of Americans.
	The decision... was an ethical decision on the part of Admiral Hall.

### Reading Question 1

- When the Zimmerman telegram was deciphered by the cryptanalysts of Britain's Room 40, Admiral William Hall decided not to tell American President Woodrow Wilson about its contents because doing so might let the Germans know that Britain was capable of breaking their codes. Given the danger posed to America by the unrestricted U-boat warfare indicated in the telegram, was this ethical of Admiral Hall?

### Reading Question 1

Ethical	Not Ethical
<ul style="list-style-type: none"> <li>• Whole country, way of life at risk.</li> <li>• Who's "pulling the trigger"? Germany, not England.</li> <li>• Who's lying here? Germany, not England.</li> <li>• The good of the many over the good of the (relative) few.</li> <li>• Message hasn't been deciphered fully.</li> <li>• Could it be a fake German message?</li> </ul>	<ul style="list-style-type: none"> <li>• By not telling the Americans, people would definitely die. Telling the Americans wouldn't necessarily save lives.</li> <li>• What England did was as unethical as what Germany did—manipulating the Americans for their own ends.</li> </ul>

### Reading Question 2

- Germany learned that Britain had broken their codes from histories of the First World War written by Winston Churchill and the British Royal Navy. Given that this knowledge prompted Germany to invest in the Enigma machine technology prior to the Second World War, should these histories have been published? What might have motivated Britain to make their code-breaking success known in this fashion?

### Reading Question 2

Pros (Share the Story)	Cons (Don't Share)

### The Enigma Machine

The Enigma Machine

