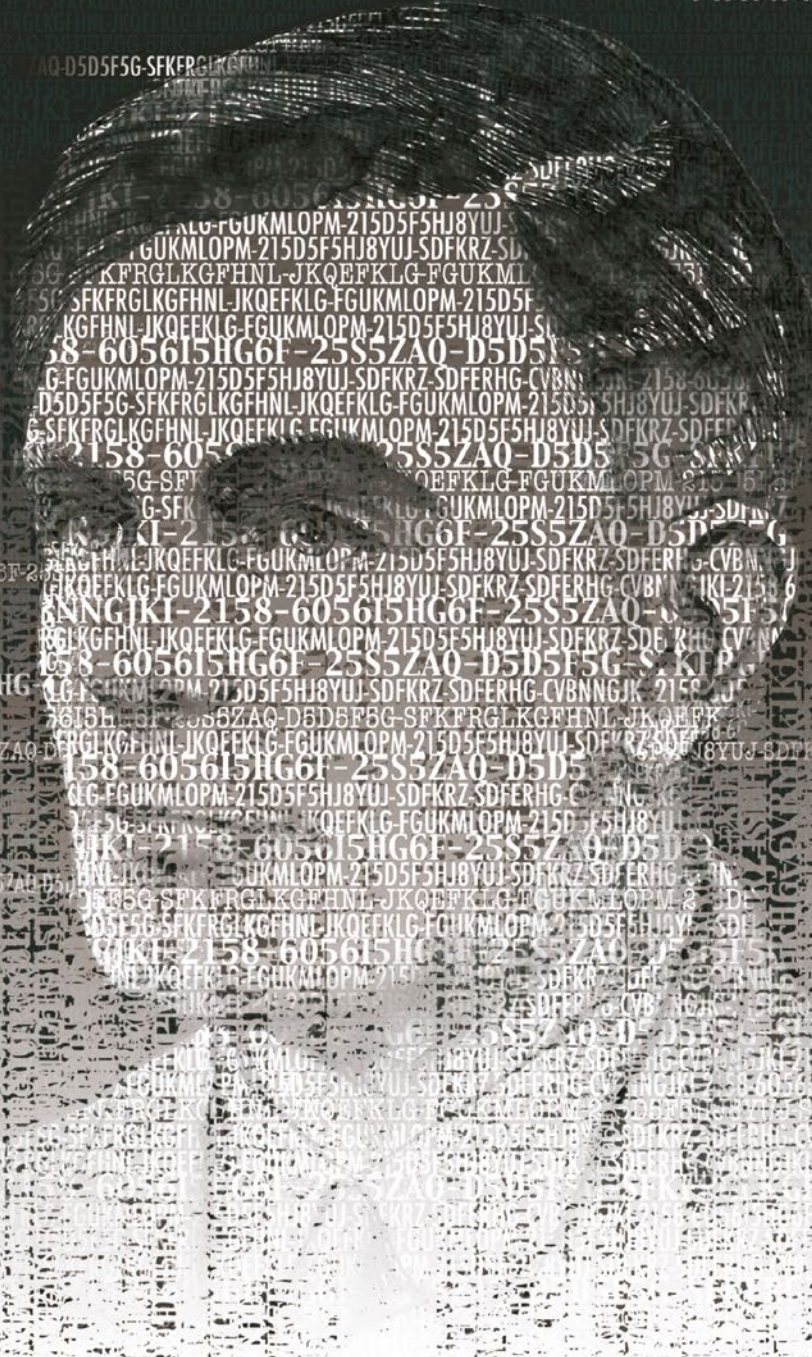


ÉRIC LIBERGE

ARNAUD DELALANDE



# THE CASE OF ALAN TURING

THE EXTRAORDINARY AND TRAGIC STORY  
OF THE LEGENDARY CODEBREAKER

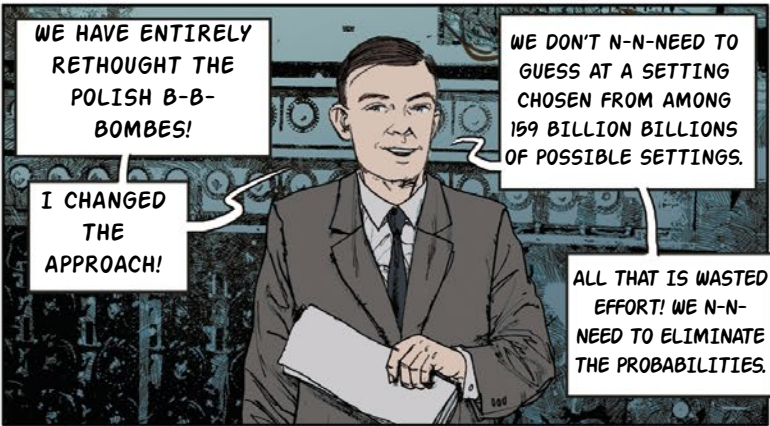




LADIES AND GENTLEMEN, THIS IS OUR ELECTROMAGNETIC B-B-BOMBE!  
THE ONLY CRYPTOLOGICAL BOMBE THAT CAN RIVAL ENIGMA!



TURING ... DO YOU  
MEAN WE ALLOCATED  
MORE THAN £100,000  
TO BUILD THIS BIG  
SARDINE TIN?! FOR  
YOUR OWN SAKE, IT  
HAD BETTER WORK!

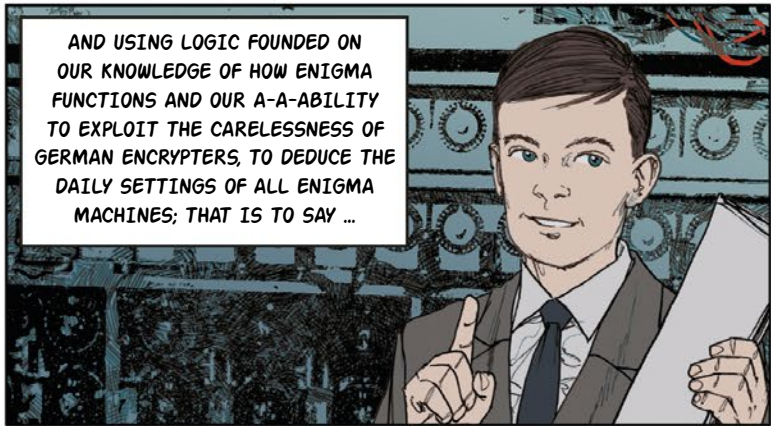


WE HAVE ENTIRELY  
RETHOUGHT THE  
POLISH B-B-  
BOMBES!

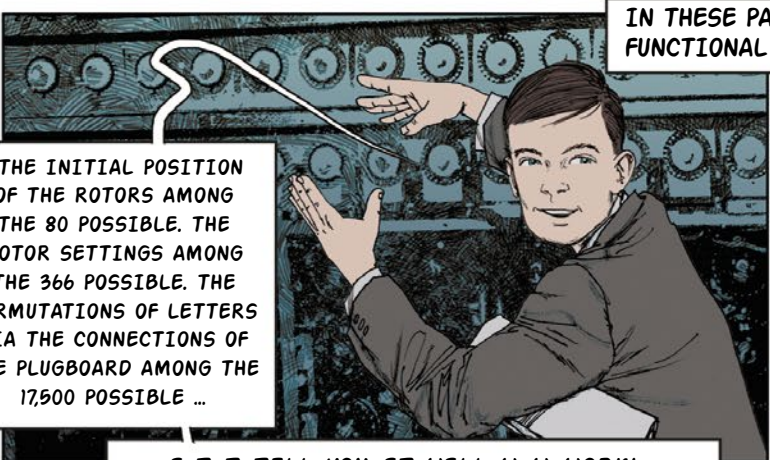
I CHANGED  
THE  
APPROACH!

WE DON'T N-N-NEED TO  
GUESS AT A SETTING  
CHOSEN FROM AMONG  
159 BILLION BILLIONS  
OF POSSIBLE SETTINGS.

ALL THAT IS WASTED  
EFFORT! WE N-N-  
NEED TO ELIMINATE  
THE PROBABILITIES.



AND USING LOGIC FOUNDED ON  
OUR KNOWLEDGE OF HOW ENIGMA  
FUNCTIONS AND OUR A-A-ABILITY  
TO EXPLOIT THE CARELESSNESS OF  
GERMAN ENCRYPTERS, TO DEDUCE THE  
DAILY SETTINGS OF ALL ENIGMA  
MACHINES; THAT IS TO SAY ...



...THE INITIAL POSITION  
OF THE ROTORS AMONG  
THE 80 POSSIBLE. THE  
ROTOR SETTINGS AMONG  
THE 366 POSSIBLE. THE  
PERMUTATIONS OF LETTERS  
VIA THE CONNECTIONS OF  
THE PLUGBOARD AMONG THE  
17,500 POSSIBLE ...

I T-T-TELL YOU, IT WILL W-W-WORK!



IT CAN DO THE  
WORK OF 10,000  
DECRYPTERS.

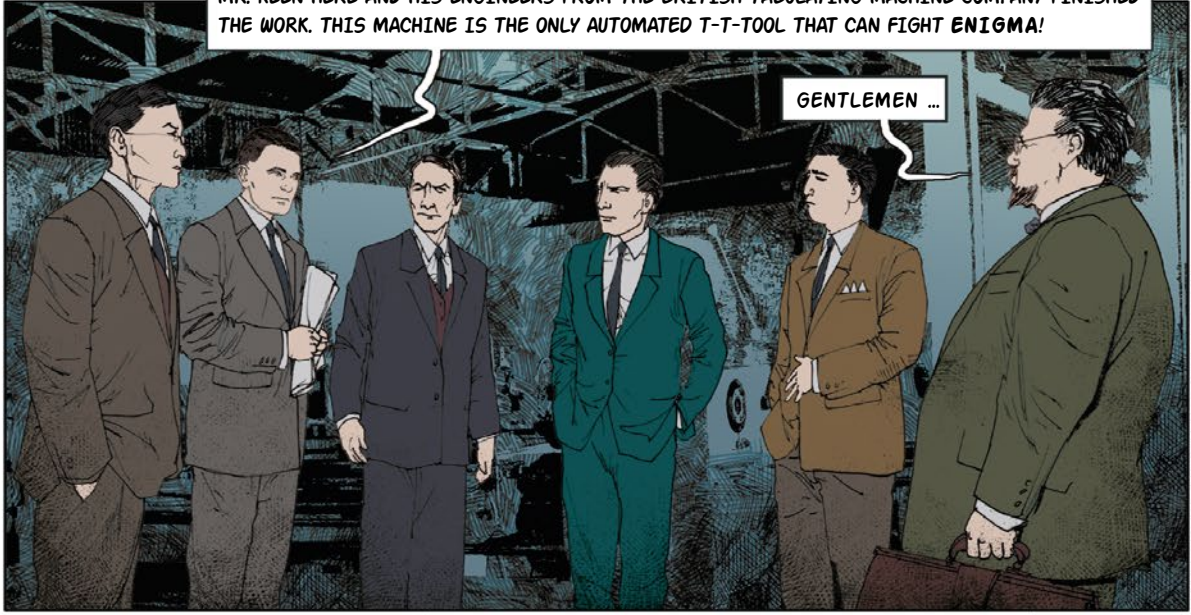


MR. KEEN HERE AND HIS ENGINEERS FROM THE BRITISH TABULATING MACHINE COMPANY FINISHED THE WORK. THIS MACHINE IS THE ONLY AUTOMATED T-T-TOOL THAT CAN FIGHT ENIGMA!

GENTLEMEN ...

Harold Hall "Doc" KEEN, engineer

MR. TURING IS RIGHT. IT'S OUR ONLY CHANCE.



FOR EACH POSSIBLE SETTING, ELECTRICALLY, THE BOMBE WILL CARRY OUT A CHAIN OF LOGICAL DEDUCTIONS BASED ON PROBABLE WORDS.

IF WE MANAGE TO ISOLATE A PROBABLE FRAGMENT OF CLEAR TEXT, THE BOMBE WILL SEARCH FOR ALL POSSIBLE CORRECT SETTINGS USED FOR 24 HOURS BY EVERY GERMAN NETWORK.

DEDUCTIONS BASED ON PROBABLE WORDS.

OH, LORD ...



EVERY TIME A CONTRADICTION OCCURS, IT REJECTS THAT SETTING AND MOVES ON TO THE NEXT.

SO THERE!

HMM ... ALL RIGHT.

VERY GOOD.

MOST SETTINGS WILL PROVOKE CONTRADICTIONS. ONLY THE REMAINING ONES, AND THEY ARE VERY FEW, WILL BE CLOSELY EXAMINED.



AND THIS MACHINE ...

HAVE YOU GIVEN IT A NAME?

VICTORY! OF COURSE ...





Then the real battle of numbers began ...



But very quickly ...



VICTORY IS NOT AT HAND, SIR

... THE INITIAL RESULTS ARE DISAPPOINTING. THE MACHINE ISN'T PRODUCING ANYTHING USEFUL, AND THE ATTEMPTS AT DECRYPTION ARE FAILING ONE AFTER THE OTHER ...



DON'T GIVE UP!!

PUSH YOURSELF FURTHER!

IT'S EXACTLY LIKE A MARATHON. THE MORE I RUN, THE BETTER I THINK.

THE MORE THE MACHINE WORKS, THE FASTER IT WILL BREAK ENIGMA!



IT'S TOTAL RUBBISH, ALAN!!

WE'RE UP TO OUR NECKS IN IT!!

MR. TURING IS RIGHT ... IT'S OUR ONLY CHANCE.

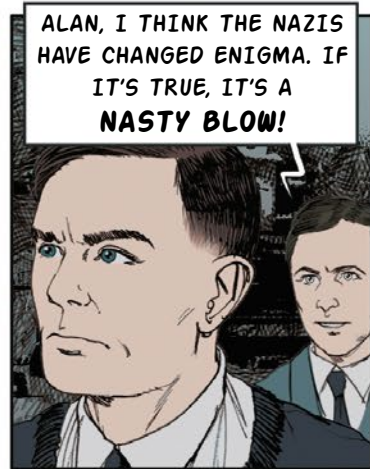
VICTORY, MY GIRL ...

ALAN, I THINK THE NAZIS HAVE CHANGED ENIGMA. IF IT'S TRUE, IT'S A NASTY BLOW!

IT'S NORMAL, SHE'S TUNING UP! ... SHE'S AN INTELLECTUAL TOO. BUT YOU'LL SEE, SHE'S A GOOD GIRL. A REGULAR BOMBE! SOON WE'LL MARRY HER OFF.



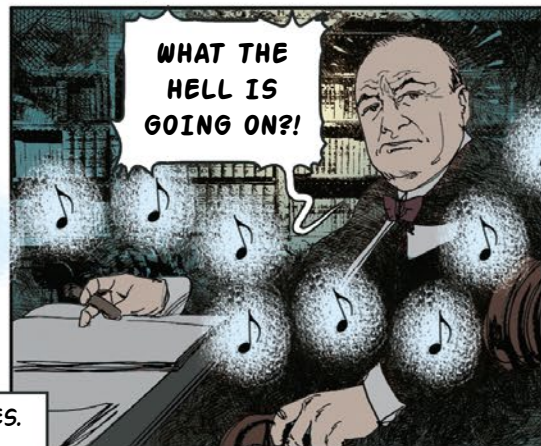
AM I COMPLETELY WRONG ABOUT YOU?



THEY WERE REPEATING THE KEY AT THE BEGINNING OF THE CODE ... THEY MUST HAVE ABANDONED THE DOUBLE KEY.

THE ENIGMA CODES ARE EVER MORE COMPLEX!

WE'LL NEED MORE FINANCING FOR NEW BOMBES. A WHOLE SERIES OF THEM!



WHAT THE HELL IS GOING ON?!





OUR TARGET IS THE GERMAN NAVY'S USE OF ENIGMA.

GORDON HERE, MR. WELCHMAN, HAS PERFECTED THE ARCHITECTURE OF THE APPARATUS WITH HIS DIAGONAL BOARD.



WE SHOULD THANK HIM. HE WILL H-H-HELP US DOUBLE OUR DECRYPTION CAPACITY. WE WILL EQUIP VICTORY WITH IT.



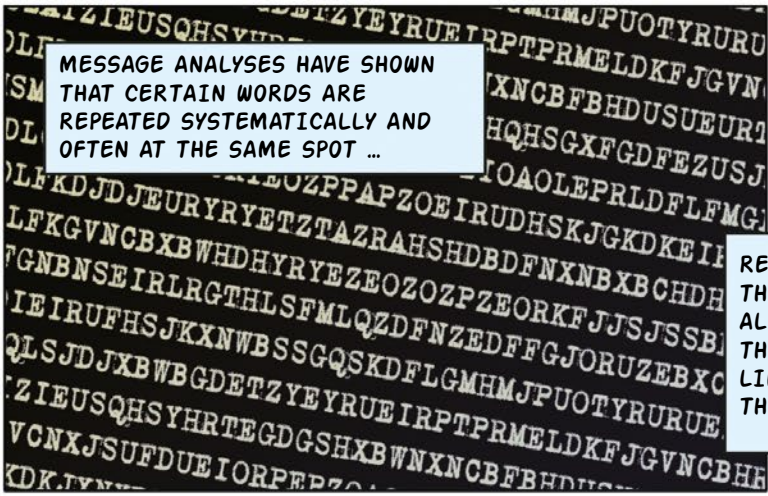
OUR FRIEND RICHARD PENDERED HAS IMPROVED THE MECHANISM FURTHER.



HERE ARE THE SPECIFICATIONS OF OUR SECOND M-M-MACHINE. IT WILL BE OPERATIONAL IN AUGUST. WE'RE CALLING IT AGNUS DEI.

IT'S S-S-STRONGER AND MORE COMPLEX THAN VICTORY, IT WILL BE LIKE A SERIES OF REPLICAS OF THE ENIGMA MACHINE!

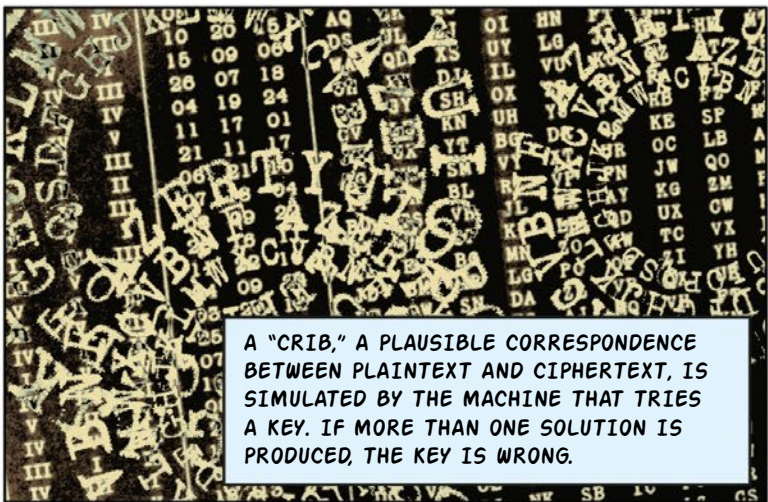




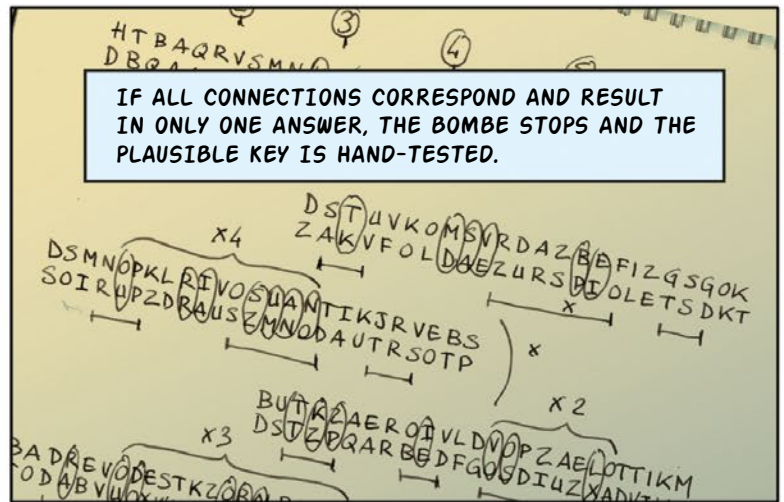
MESSAGE ANALYSES HAVE SHOWN THAT CERTAIN WORDS ARE REPEATED SYSTEMATICALLY AND OFTEN AT THE SAME SPOT ...



RECURRENCES IN THE MESSAGES ARE THE REAL KEY! OUR WORK IS TO TRY ALL COMBINATIONS, AND FIND THOSE THAT TRANSFORM THOSE WORDS INTO LINES OF CHARACTERS WE CAN LOCATE. THAT'S HOW THE POLES WERE WORKING.



A "CRIB," A PLAUSIBLE CORRESPONDENCE BETWEEN PLAINTEXT AND CIPHERTEXT, IS SIMULATED BY THE MACHINE THAT TRIES A KEY. IF MORE THAN ONE SOLUTION IS PRODUCED, THE KEY IS WRONG.

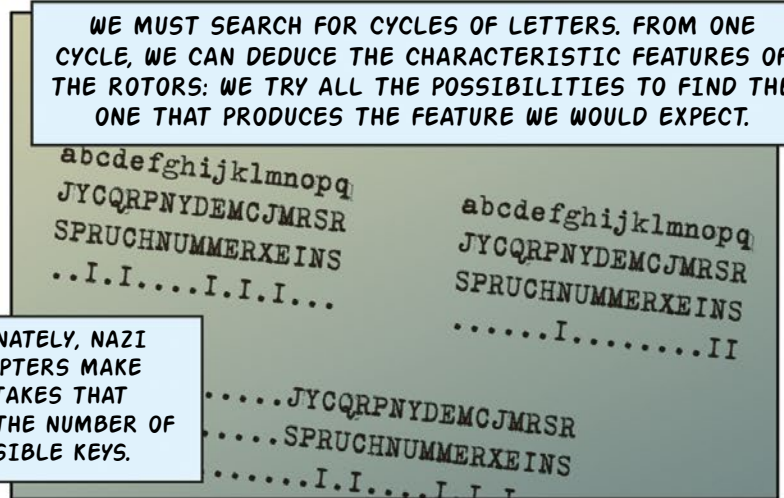


IF ALL CONNECTIONS CORRESPOND AND RESULT IN ONLY ONE ANSWER, THE BOMBE STOPS AND THE PLAUSIBLE KEY IS HAND-TESTED.



IF ENIGMA WAS USED CORRECTLY, WE WOULD HAVE TOO MANY COMBINATIONS TO TEST.

FORTUNATELY, NAZI ENCRYPTERS MAKE MISTAKES THAT REDUCE THE NUMBER OF PLAUSIBLE KEYS.

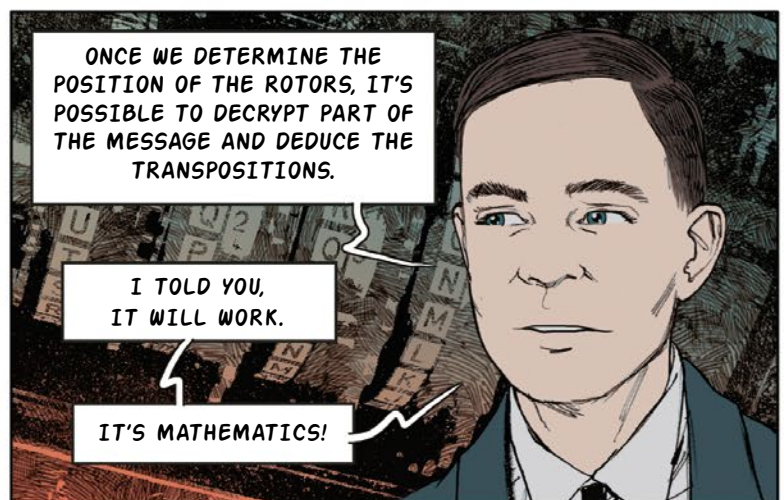


WE MUST SEARCH FOR CYCLES OF LETTERS. FROM ONE CYCLE, WE CAN DEDUCE THE CHARACTERISTIC FEATURES OF THE ROTORS: WE TRY ALL THE POSSIBILITIES TO FIND THE ONE THAT PRODUCES THE FEATURE WE WOULD EXPECT.



OUR BOMBES THAT REPRODUCE THE ENIGMA ROTORS WILL ALLOW US TO TRY, IN PARALLEL FASHION ...

UP TO 20,000 CONFIGURATIONS A SECOND.



ONCE WE DETERMINE THE POSITION OF THE ROTORS, IT'S POSSIBLE TO DECRYPT PART OF THE MESSAGE AND DEDUCE THE TRANSPOSITIONS.

I TOLD YOU, IT WILL WORK.

IT'S MATHEMATICS!



At MI6 HQ

BETWEEN SEPTEMBER AND CHRISTMAS OF LAST YEAR, WE LOST THOUSANDS OF SAILORS! AND MORE THAN 810,000 TONS OF GOODS AND MERCHANDISE! ONE CONVOY IN FIVE DOESN'T REACH PORT. THAT'S OUR REALITY!

MR. PRIME MINISTER, OUR ONLY HOPE IS TO OBTAIN A COPY OF THE MONTHLY INSTRUCTIONS FOR AN ENIGMA. AND FOR THAT, WE HAVE A

**PLAN!**

John GODFREY, Director of the British Department of Naval Intelligence, Royal Navy

IT WAS DEVISED BY MY FORMER AIDE DE CAMP, COMMANDER ...

FLEMING.

IAN FLEMING.

Commander Ian FLEMING, the future author of James BOND

WHAT'S THIS OPERATION NUTCRACKER?

WITH ALL RESPECT, PRIME MINISTER, WE HAVE CALLED IT OPERATION RUTHLESS. A SPECIAL OPERATION. WE KNOW A GERMAN RESCUE VESSEL IS SAILING THE CHANNEL.

HERE'S THE IDEA ...

SOME TIME AGO WE CAPTURED A NAZI BOMBER. IT WILL TAKE OFF FROM OUR TERRITORY WITH A BILINGUAL CREW IN ENEMY UNIFORMS.



IT WILL SEND A DISTRESS SIGNAL AND LAND IN THE WATER NEAR THE GERMAN VESSEL, WHICH WILL COME TO ITS AID.



OUR MEN, IN ENEMY UNIFORM, WILL TAKE OVER THE SHIP ...



... AND, IN THE PROCESS, THE KRIEGSMARINE CODES.

HMM ... WHY NOT, THEN? GIVEN OUR SITUATION ...

AND GOOD GOD! I'D LIKE TO KNOW WHAT THE HELL THE GC&CS IS DOING!!





**THE CASE OF ALAN TURING**  
**The Extraordinary and Tragic Story of the  
Legendary Codebreaker**

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Alan Turing, subject of the Oscar-winning 2014 film *The Imitation Game*, was the brilliant mathematician solicited by the British government to help decipher messages sent by Germany's Enigma machines during World War II. The work of Turing and his colleagues at Hut 8 created what became known as the "bombe" which descrambled the German navy's messages and saved countless lives and millions in British goods and merchandise.

Despite his heroics, however, Turing led a secret life as a homosexual; haunted by the accidental death of a young love, he got briefly engaged to Joan Clarke, a fellow cryptanalyst, until he told her the truth. After a young man with whom he was involved stole money from him, he went to the police, where he confessed his homosexuality; he was charged with gross indecency, and only avoided prison after agreeing to undergo chemical castration. Tragically, he committed suicide two years later, by ingesting cyanide through a poisoned apple.

The particulars of Turing's achievements were only made known in 2012, following the release of once-classified papers. Authors Liberge and Delalande used this information to create a biography that is scientifically rigorous yet understandable for the lay reader. It's also a meticulous depiction of World War II, and an intimate portrayal of a gay man living in an intolerant world.

Delving deeper into Turing's life than *The Imitation Game*, this graphic novel is a fascinating portrait of this brilliant, complicated, and troubled man.

**Eric Liberge** has authored or co-authored over thirty graphic novels in his native France, including books on Versailles and World War II, as well as numerous books in the fantasy genre.

**Arnaud Delalande** is the author of nine novels as well as numerous graphic novels in France, including *Le Piège de Dante* (Dante's Trap), translated into twenty languages. His prizes include le Prix du Roman d'Évasion and le Prix Charles-Oulmont de la Fondation de France.