



# Eavesdropping on the Biafra-Lisbon link

*Breaking historical ciphers from the Biafran war*

Dr Richard Bean - University of Queensland

Dr George Lasry - the DECRYPT Project

Frode Weierud

Cryptologic History Symposium

11 May 2022



# Agenda

- Quick introduction
- Interception and codebreaking
- Contents and historical context

# The team

- Dr Richard Bean
  - Mathematician and computer scientist
  - University of Queensland
  - Combinatorics and statistics are very important for classical cryptology
- Dr George Lasry
  - The DECRYPT Project
  - Computer scientist, specializing in breaking historical ciphers
- Frode Weierud
  - Expert in historical machines and ciphers



# Agenda

- Quick introduction
- **Interception and codebreaking**
- Contents and historical context

# The interception - 1969-1970



Oslo  
Norway



Telex Machine



Frode Weierud

The Secessionist Republic of Biafra 1967-1970

# Example Telex - unencrypted - August 2, 1969

nnnn  
tczc bal 191/2/8 bis - 02 1720

for o from chris

following article appeared on page 15 of the daily telegraph  
of 2/8/69.

'pope makes nigeria peace move'  
by christopher munnion in kampala....

the pope last night made an unprecedented move for a peace  
settlement in nigeria by holding meetings with representatives  
of both sides in the conflict.

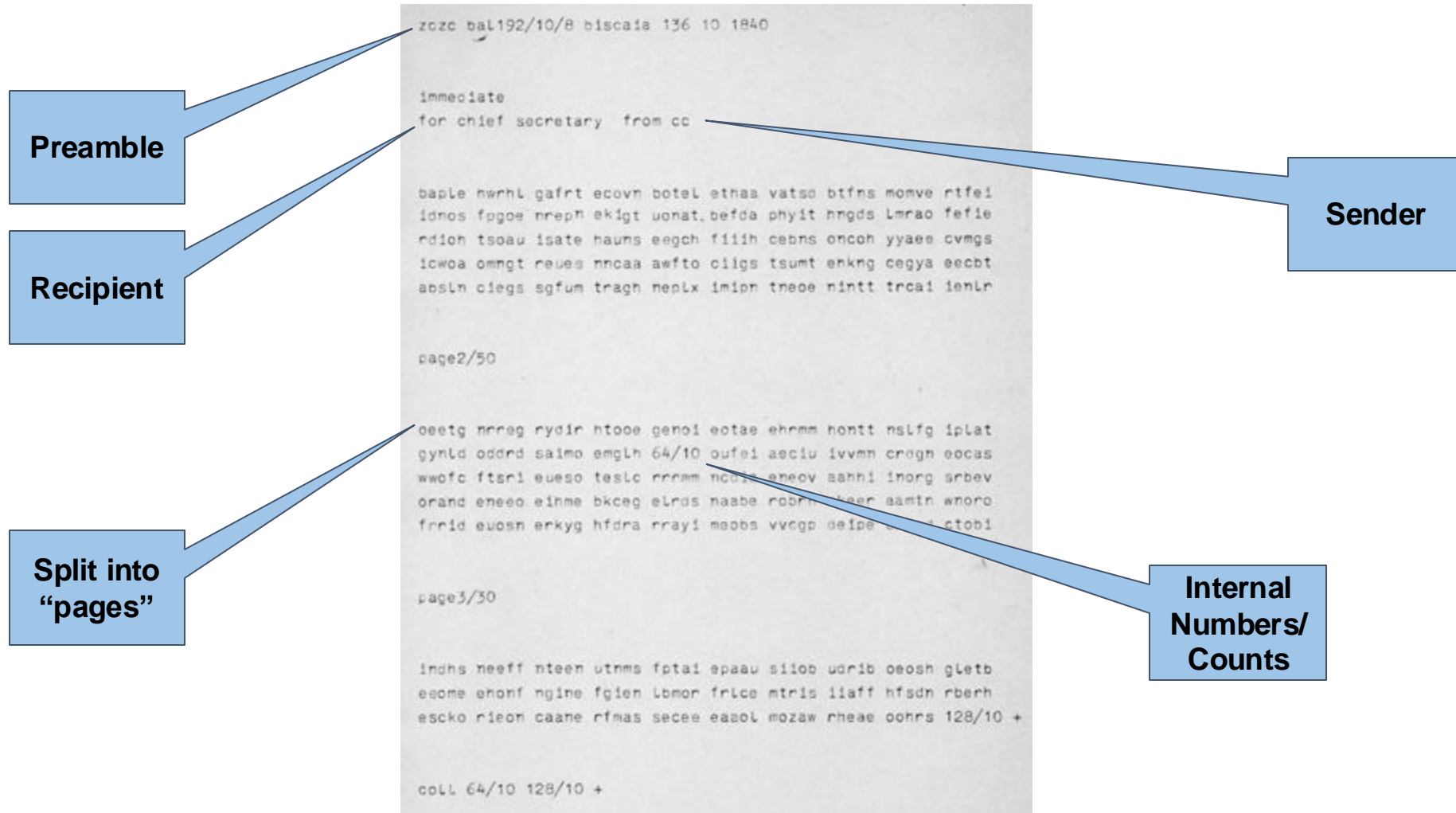
after a day filled with iremony, he took the opportunity of  
receiving separately deputations from federal nigeria and from biafra  
the meetings took place at his request in the apostolic  
nunciature (vatican embassy) in kampala, where he is staying.  
there was no immediate indication from either side of the effect  
of the initiative.

observers in uganda think it is unlikely that the pons  
influence will help towards breaking the deadlock on the two-  
year conflict.

he has indicated the depth of his resolve to mediate by saying  
he would stay in africa for a month if he saw any chance of  
bringing the two sides together.

the federal nigerian delegation in kampala is led by chief  
anthony enanoro, commissioner for information and nigerias chief  
peace negotiator. heading the biafran deputation is mr.  
austine okwu, gen. ojukwus roving envoy in east and central africa.

# Example Telex - enciphered - 5-letter groups



# Example Telex - enciphered - 5-digit groups

zczc bal 157/16/8 bis - 16 1412

most immediate

for o from dr. otue

00167 83466 21998 27651 65160 80629 89694 28077 54206 55498  
62780 52074 24578 98124 53648 80876 77205 36809 22368 81513  
71128 96799 53866 34162 47093 57458 51268 05069 17985 22135  
93335 48337 83959 65610 37988 45357 71499 39131 47891 96446  
14970 09096 58410 12552 68176 48065 25442 50589 32189 80292  
44045 67526 18976 48794 34156 88979 46182 16929 30192 68349  
59022 00062++

# Message overview summary

Message	Date	Groups	Parts	Type	Garbles
BAL025	4/8/1969	164	2	5-letter	some garbles
BAL026	4/8/1969	164	2	5-letter	
BAL028	4/8/1969	65	1	5-letter	heavily garbled
BAL029	4/8/1969	142	1	5-letter	
BAL030	4/8/1969	63	1	5-letter	
BAL031	4/8/1969	122	1	5-letter	
BAL074	6/8/1969	204	2	5-letter	
BAL179	9/8/1969	112	1	5-letter	
BAL192	10/8/1969	128	1	5-letter	
BAL193	10/8/1969	133	1	5-letter	some garbles
DARTLX	11/8/1969	735	5	5-letter	some garbles
BAL139	16/8/1969	277	2	5-letter	
BAL141	16/8/1969	1001	7	5-letter	
BAL150	16/8/1969	298	1	5-letter	some garbles
BAL151	16/8/1969	235	2	5-letter	
BAL214	19/10/1969	366	1	5-letter	
BAL215	19/10/1969	72	1	5-letter	
BAL216	19/10/1969	142	1	5-letter	
BAL015	20/10/1969	85	1	5-letter	
BAL016	20/10/1969	197	2	5-letter	some garbles
BAL018	20/10/1969	42	1	5-letter	some garbles
BAL040	21/10/1969	69	1	5-letter	
BAL050	21/10/1969	40	1	5-letter	some garbles
BAL051	21/10/1969	222	2	5-letter	some garbles
BAL027	4/8/1969	741		5-figure	heavily garbled
BAL032	4/8/1969	151		5-figure	some garbles
BAL157	16/8/1969	62		5-figure	
BAL158	16/8/1969	154		5-figure	

# Frequency counts

Message	Date	Top 10 Frequent Letters
BAL25A	4/8/1969	E O T N A I R S L H
BAL25B	4/8/1969	S E D T N A C M I O
BAL26A	4/8/1969	E T O A S R N I H D
BAL26B	4/8/1969	E O T S I A P R H L
BAL28	4/8/1969	E A T R O N S L I D
BAL29	4/8/1969	E T A O R I S H N C
BAL30	4/8/1969	E T O R A I N D L F
BAL31	4/8/1969	E S A O R I T N L D
BAL74A	6/8/1969	E O T A S N R I C L
BAL74B	6/8/1969	E T O N S A I L R M
BAL179	9/8/1969	E R T O I S N A H G
BAL192	10/8/1969	E N O I A R S T G H
BAL193	10/8/1969	E T S O A I R N L H
DARTLX1A	11/8/1969	E A N T O R I L S D
DARTLX1B	11/8/1969	E T O A I S N R C M
DARTLX1C	11/8/1969	E O T A R S N I L M
DARTLX1D	11/8/1969	E O N T I S A R H L
DARTLX1E	11/8/1969	E N I T A R O S H D
BAL139A	16/8/1969	E O A T S N R H D I
BAL139B	16/8/1969	E A S T O N R I H D
BAL141A	16/8/1969	E N T I O S R A D U
<b>All messages:</b>		E O T A N R I S H L
<b>Corpus of English texts:</b>		E T A O I N S H R D

Likely a transposition cipher  
Original English plaintext



# Complete columnar transposition

2	1	6	5	3	4	0
K	E	Y	W	O	R	D
T	H	E	C	L	A	S
S	I	C	A	L	T	R
A	N	S	P	O	S	I
T	I	O	N	C	I	P
H	E	R	I	S	N	O
T	A	S	T	R	O	N
G	C	I	P	H	E	R

(1) Plaintext transposition rectangle

0	1	2	3	4	5	6
D	E	K	O	R	W	Y
S	H	T	L	A	C	E
R	I	S	L	T	A	C
I	N	A	O	S	P	S
P	I	T	C	I	N	O
O	E	H	S	N	I	R
N	A	T	R	O	T	S
R	C	G	H	E	P	I

(2) Ciphertext transposition rectangle

S	R	I	P	O	N	R	H	I	N	I	E	A	C	T	S	A
T	H	T	G	L	L	O	C	S	R	H	A	T	S	I	N	O
E	C	A	P	N	I	T	P	E	C	S	O	R	S	I		

(3) Ciphertext

# Incomplete columnar transposition

	2	1	6	5	3	4	0
	K	E	Y	W	O	R	D
T	H	E	C	L	A	S	
S	I	C	A	L	T	R	
A	N	S	P	O	S	I	
T	I	O	N	C	I	P	
H	E	R	T	R	A	N	
S	P	O	S	E	S	T	
E	X	T					

(1) Plaintext transposition rectangle

	0	1	2	3	4	5	6
	D	E	K	O	R	W	Y
S	H	T	L	A	C	E	
R	I	S	L	T	A	C	
I	N	A	O	S	P	S	
P	I	T	C	I	N	O	
N	E	H	R	A	T	R	
T	P	S	E	S	S	O	
	X	E					T

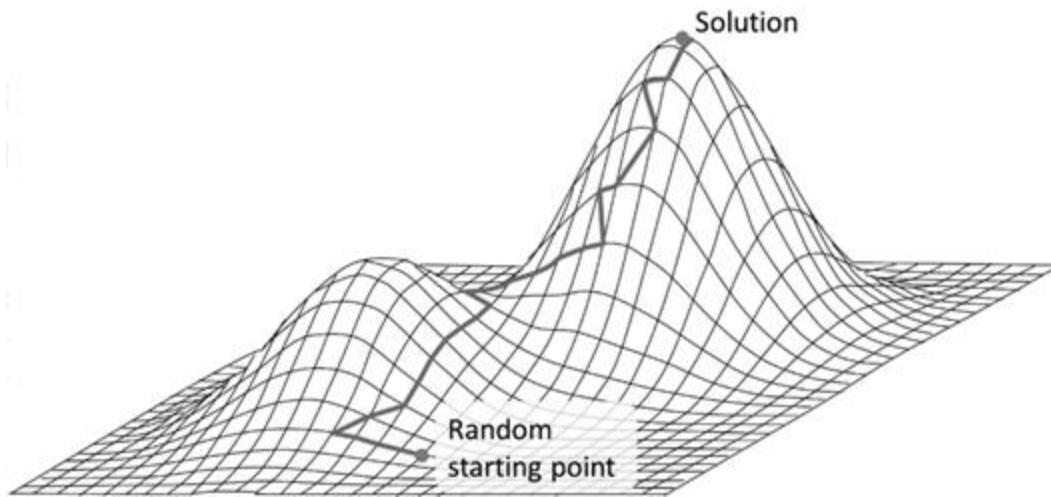
(2) Ciphertext transposition rectangle

S	R	I	P	N	T	H	I	N	I	E	P	X	T	S	A
T	H	S	E	L	L	O	C	R	E	A	T	S	I	A	S
C	A	P	N	T	S	E	C	S	O	R	O	T			

(3) Ciphertext

	1	2	3	4	5	6	7	8
				R				
			T	O	H			
		W	A	T	N	E		
	E	A	E	E	R	L	O	
E	T	U	R	E	D	H	N	
A	A	E	O	A	S	T	Q	
R	L	T	C	O	E	C	R	
T	O	N	T	S	D	O	D	
R	A	E	T	N	O	E	I	
R	O	I	E	G	O	A	M	
G	X	O	R	H	T	I	S	
H	U	T	O	N	E	T	F	
R	W	A	T	R	L	O	E	
E	A	E	E					

# Hillclimbing Algorithms



Cryptologia

ISSN: 0161-1194 (Print) 1558-1586 (Online) Journal homepage: <https://www.tandfonline.com/loi/ucry20>



**Cryptanalysis of columnar transposition cipher with long keys**

George Lasry, Nils Kopal & Arno Wacker

# Initial breakthrough - two short messages

BAL25B

**T**DDTA **S**MLES CHESS **A**CFCE DTSDS **B**ICTR OEDSS **B**NDEE NAANS NNEDI  
**P**EEEM 11/4 **O**ODME **R**TUTS **W**METG **E**EDSN **N**OPGS **I**CDAS LRRSS **T**ENTS  
**G**YDSD AMEES LYISS 22/4

BAL26B

**T**BHHL **S**SHNI UTINE **A**MOWO MAPGE **B**ICTR SMNIE **B**AEDES EHLOE OOERT  
**P**ETSO 11/4 **O**RPOA **R**EFIO **W**EETE **E**LOOE **N**YEIV **I**ALOD RSUOE **T**MTSP  
**G**WPSA WTECS TOGTE 22/4

# Initial breakthrough - two messages combined

**PARTTWOBEGINS**ANDCOLBNL  
ECTEDMONEYCOMMATHEYINR  
EFUNDEDDDDDDPLEASEDICER  
ECTTTMESSAGEENDSSSTDS  
MESSAGEENDSSSSSSSSSSSRIS  
**PARTTWOBEGINS**WEMUSTBOR  
EMEMBERALWAYSTHATMOIOS  
TOFTHEPEOPLEHELPINGCEU  
SWISHTODOSOINCOGNITTRO  
OOPLEASEADVISEEEEEERTE

Two columns are not part of the message plaintext

**BICTRBICTR**  
**NNEDIOERT**

# Attempts on other messages

- Cribs
  - “PART ONE BEGINS”
  - Probable words “Ojukwu”, “Ugwumba”, “Mojekwu”
- Multiple anagramming
- Hillclimbing - various key lengths (up to 25)
- Very long keys - 40 to 100

# Second breakthrough - BAL31

OSPSIXZEROTHSEORDASHTHEYHAVENSEWRCRESTMAREACLOWISILSHOONTRACT  
SHABAFROMCHIDDIJPASSVORTSSEMTEUIRDCIYGWUYDXOPENDRAPIREDTHEYAR (passport, expired)  
EDRYYYTENDEREANDDOCTORSIKORTRALEPRYNTEDMOGPVTOHANGLINEATHEGG (doctor)  
LINSAPPLYINGADLOIKORADASHAPOORRACEINSOSSHEMDELECTAMPLEROFTHEG (applying)  
ROUHESWISSREHASDONALDASHHEHADBYHASOCIFOFISAHSTNPTASHHEADIPLOM (swiss, donald)  
ATITRYVISAFORTAREVELCERTIFICPRESSSTARORENNASABYCTASPPOEMICOLO (visa for travel certificate press)  
NDREEDOCTORSEPTAFLFIVEWANTTOUTALMERNAFTHREGALAAMARGOIRATMUGGL (doctor, five want)  
ISESTOCTMEINMISTEELKINONAUGUIDELOSTOOURSEACWWDEMTLORTNSSILLIG (guide)  
REPRELIEVEFIIGSVENMESSAGEENDAFLINSMENINTOSTANOVENESALLEMICOLO (messageend)  
NMRKINGATABORDSHENDSSSSSSSSSTONNEASHESWORETHEMSAGAINGESHALLAR (endsssssssss)

**Hillclimbing - Key length: 61!**

# Patterns in the key

16, 28, 32, 55, 46, 43, 21, 58, 12, 3, 0, 6, 47, 44, 51, 49,  
26, 11, 42, 57, 48, 45, 23, 60, 14, 5, 2, 8, 19, 15, 18, 10,  
52, 22, 36, 34, 39, 37, 24, 9, 40, 17, 38, 31, 30, 27, 33, 53,  
20, 54, 25, 29, 41, 56, 59, 13, 4, 1, 7, 50, 35

**Maybe not a key with 61 elements?**



# Additional decipherments - similar patterns

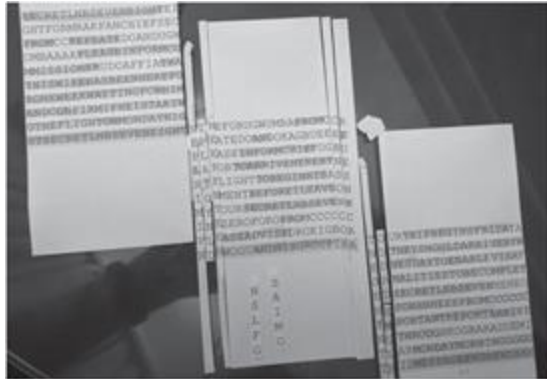


BAL214C (with key length 41)

CONTAINIMPORTANTMEGTABEGINSINTHETHREPARTE  
 RIALLLLTHESEMATERRHRIRIVINGTONIGSERANOMAL  
 Souldnotbeopenedhowiismarkedpppwhichtont  
 HECUSTOMSHEREEEEEPOTOMATERIALSANKPEPSTRPL  
 EASEARRANGEFORPACEUTKDOHHNNNSIGNDCOAG  
 ESTOBEOPENEDTHERESSITHEYAREAIRRRUUUUUBONO  
 RDERTHATEXPECTEDOAGWIOMESSEXXXXITEDFEIGNE  
 RSMAYBEKNOWNNNNPLIENWHATTHEYARETKNODONAS  
 EKEEPMEPOSTEDASTOGLWOHEYBELONGGGWHOMORTHA  
 TTHEFINDINGSAREEELDENTHEPACKAGESSEPCIGSEE

BAL151B (with key length 43)

PHEIGHTOFTHEINSPECTORNTWOBEGINSOFTWOUNNRST  
 AGENERALOPPOLICELETTERTERGERMANFILMCOMPANIEND  
 EREFERENCESSONEZEROTWASTHEYALSOCLAIMTHESOS  
 IOSTROKEONESEVENNINEONARESTOFAMERICANANDTIE  
 FEOFONESIXAUGUSTONENINICHTTTVVVSTATIONSSEHN  
 SESIXEIGHTCOMMAYOUCONSTAHGEOTLEMENAREKNOBOO  
 WIDERTNEIRVISITNOWOPPOPMPOREERSANDFRIENDSBU  
 SRTUNEDANDIN THE INTERESISAFRIAAWHILETHERFYB  
 ETOFDALFONPLEASECONVEYONLOCROBJECTIONTOSAN  
 TAPPROVALEARLIESTTTTTTRRVISXTCOMMABUTINTEGI



40, 8, 32, 18, 22, 36, 4, 10, 0,  
 28, 12, 14, 24, 2, 34, 38, 26, 19, 17, 20, 16,  
 27, 11, 13, 23, 1, 33, 37, 25, 15, 29, 5, 21, 35, 3, 9,  
 39, 7, 31, 30, 6

# Reconstructing the transposition scheme

Ciphertext group	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Plaintext group	3	3	3	3	8	8	8	8	13	13	13	13	6	6	6	6	19	19	19	19
	a	b	c	d	a	b	c	d	a	b	c	d	a	b	c	d	a	b	c	d
Ciphertext group	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
Plaintext group	1	1	1	1	7	7	7	7	10	10	10	10	11	11	11	11	17	17	17	17
	a	b	c	d	a	b	c	d	a	b	c	d	a	b	c	d	a	b	c	d
Ciphertext group	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59
Plaintext group	4	4	4	4	12	12	12	12	16	16	16	16	9	9	9	9	18	18	18	18
	a	b	c	d	a	b	c	d	a	b	c	d	a	b	c	d	a	b	c	d
Ciphertext group	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
Plaintext group	2	2	2	2	14	14	14	14	5	5	5	5	15	15	15	15	0	0	0	0
	a	b	c	d	a	b	c	d	a	b	c	d	a	b	c	d	a	b	c	d

- (1) The plaintext is written in a rectangle with 20 columns, row by row.
- (2) Some transposition key is applied to shuffle the columns.
- (3) The resulting text is written column by column, to generate an interim ciphertext. So far, those steps are consistent with a "textbook" columnar transposition. But now comes the twist.
- (4) To this interim cipher, an additional group is inserted between the groups that were second and third before insertion. Another one is inserted between the groups that were fifth and sixth before insertion.
- (5) The first eight groups, which now include the two newly inserted groups, are then extracted and repositioned so that it ends right before the middle of the ciphertext.

All messages solved - including incomplete columnar transpositions

# Reconstructing the indicator system

19	4	14	0	8	16	3	5	1	11	6	7	10	2	15	13	12	18	17	9	MLSRF
19	5	14	0	10	17	4	6	1	12	7	8	11	2	15	16	9	3	18	13	NEASM
19	5	15	0	10	17	3	6	1	13	7	8	11	2	16	18	12	9	14	4	SGELD
18	4	13	0	8	15	3	5	1	10	6	7	9	2	14	19	11	17	16	12	ZLYTL
19	5	14	0	9	16	4	6	1	13	7	8	11	2	15	10	17	3	18	12	FRASG
4	13	0	8	15	3	5	1	11	6	7	9	2	14	16	18	17	10	12	19	PYTGM
17	6	13	0	10	15	3	7	1	12	8	9	11	2	14	16	5	4	18	19	SDCZZ
19	4	13	0	8	15	3	5	1	11	6	7	9	2	14	18	17	12	10	16	VRKJP
19	4	14	0	8	16	3	5	1	11	6	7	10	2	15	13	17	12	9	18	MRLFS
15	19	5	13	0	9	16	4	6	1	12	7	8	10	2	14	18	3	11	17	TAGON

Transposition key from keyword: MATZONEBASTARQUWabcde

abcde - 5-letter indicator, e.g., MLSRF

Key length of 21 (rather than 61 used for initial cryptanalysis)

# Additional messages - Swedish FRA archives

- Different **transposition scheme**
  - Non-standard
  - But simpler and less secure
- **Earlier** messages and method
  - March-April 1968



# Agenda

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# What is/was Biafra?

- Either:
  - A secessionist state from 1967 to 1970
  - And/or: Eastern Region in modern-day Nigeria
- Nigeria – population 210m, median age 18;  
1970 population 56m, median age 19;  
urban population 18% then, 52% now (Lagos, Kano, Ibadan).
- Nigeria population density 226/km<sup>2</sup>



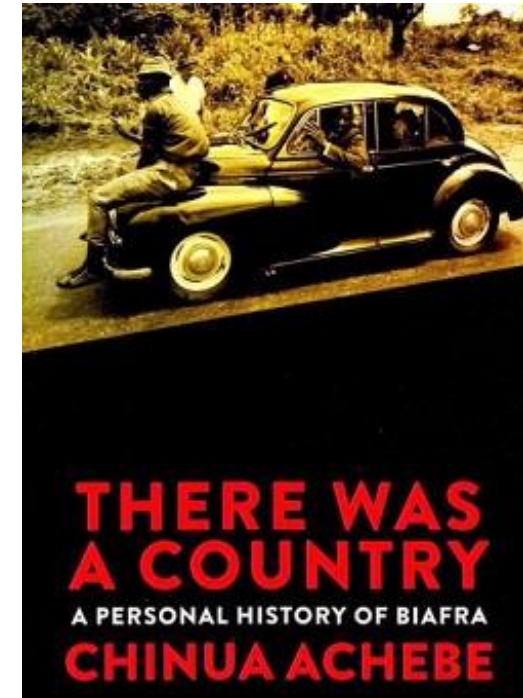
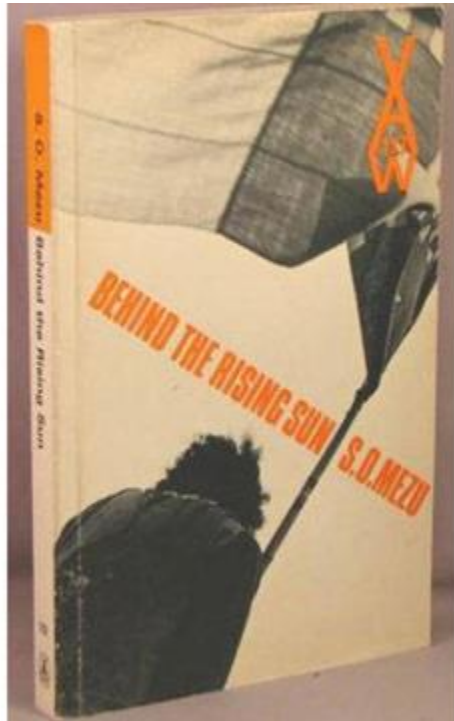
# What was the Nigerian Civil War?

- From July 1967 to January 1970 Biafra attempted to secede
- 1885 – borders of Nigeria determined at Berlin Conference
- Africa divided up between UK, France and Germany
- 1960 – Nigeria gained independence from UK
- 1966 – Coup d'état, mainly by Igbo officers
- 1966 – anti-Igbo pogroms in Nigeria
- “Republic of Biafra” proclaimed on 30 May 1967 by Colonel Odemegwu Ojukwu
- Between half a million and a million Nigerians died mainly from starvation



# Books and films about the war

- The Nigerian Civil War – many famous books
  - “Behind the Rising Sun” by Sebastian Mezu (1971)
  - “Half of a Yellow Sun” by Chimamanda Adichie (2006, film 2013)
  - “There was a Country” by Chinua Achebe (2012)



# “Behind the Rising Sun” by Mezu (1971)

A two part story: first half is a thinly veiled account of the activities of Biafra’s diplomats in Paris. Only the names are changed.

Hotel Lutetia. The Secretary-Typist Ndubisi had been there waiting for the group. He had in his hand some telegrams and urgent **telex** messages. One of them read as follows:

MOST IMMEDIATE

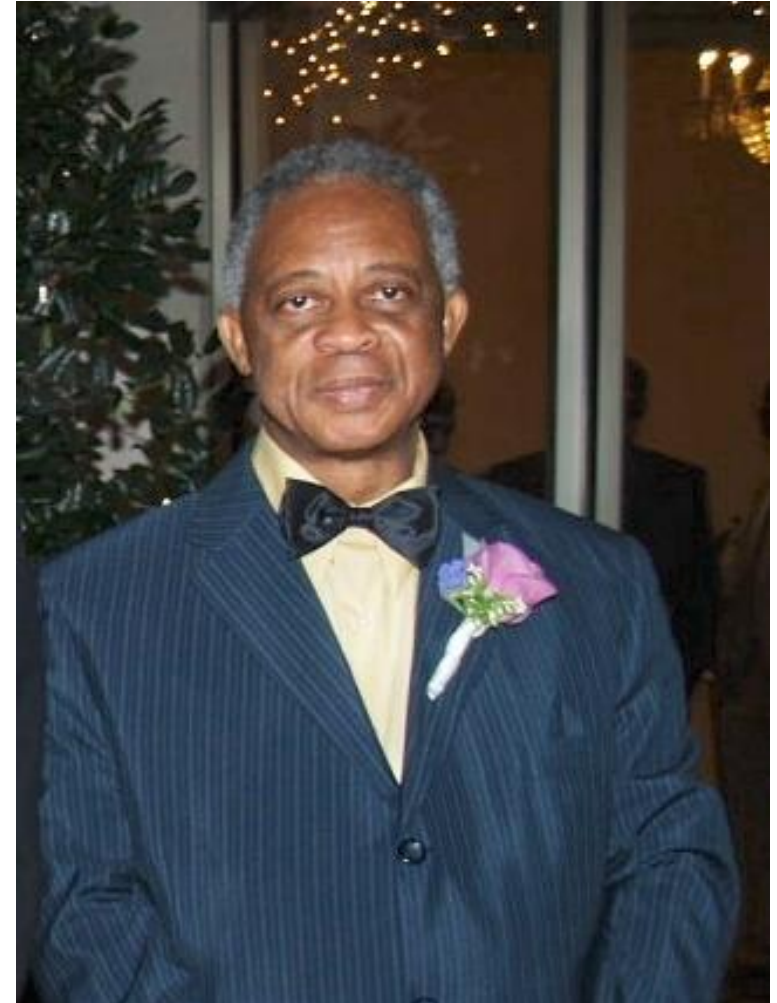
TOP PRIORITY

TOP PRIORITY

TOP PRIORITY

FOR COMMISSIONER IFEDI, REPEATED PROFESSOR OBELNATA, CHIEF IWEKA, LAWYER AFOUKWU, ENVOY ODORO AND SPECIAL REPRESENTATIVE RUDDY NNEWI-MESSAGE BEGINS QUOTE: SITUATION CRITICAL-NOT A SINGLE LOAD SINCE PROFESSOR NWOKE LEFT PARIS-SHOULD WE GIVE UP-ENEMY HAS BROKEN THROUGH BORDERS-OUR TROOPS HAVE BROKEN ALL BRIDGES TO STEM ENEMY ADVANCE-SITUATION CRITICAL REPEAT CRITICAL-URGENTLY NEED RIFLES COMMA AMMUNITION ALL CALIBRES COMMA BAZOOKAS-CONFIRM ACTION IS BEING TAKEN WITHIN TWENTY FOUR HOURS- DEFENCE SECRETARY-UNQUOTE-MESSAGE ENDS. TOP PRIORITY-TOP PRIORITY-TOP PRIORITY-TOP-

The message came in code. Professor Obelenwata was shaking when he read the message and



# “Behind the Rising Sun” by Mezu (1971)

A description of the Biafran Embassy in Lisbon

The Biafran office itself was well furnished, in exquisite taste, with chandeliers floating down from the ceilings and Persian rugs decorating the floors. The lounge looked like a palatial anteroom and the officers there seemed to have a penchant for dry rose during their meals. In one small corner, in a room adjacent to the kitchen was located the Operations Room, the tiny life-vein on which the destiny of Biafra hung. It contained the **telex** link between Biafra and the outside world.

# “Toads of War” by Eddie Iroh (1979)

While he was God-knows-where, however, an urgent **telex** message had come in from Libreville, Gabon. Using what I foolishly thought was the elementary initiative expected of a mail clerk confronted with an urgent **telex** message in the absence of the big boss, I opened the flimsy pink envelope and read the three-line message:

'RE URGENT ORDER THREE DOZEN SACKS SALT ARRIVING TONIGHT FLIGHT STOP ARRANGE IMMEDIATE CLEARANCE.'



# Is there more context?



A book by Jan-Olof Grahn, published in 2019 about Swedish Signals Intelligence Agency (FRA) activity in the “Cold War” (1947-1991).

Summary of the contents of the messages – compiled a list of codewords and names; and mentioned a “transposition specialist” at FRA worked on the ciphers.

# CIA Reading Room

In August and September 1968, FBIS (Foreign Broadcast Information Service) noticed Biafra/Lisbon radio traffic. Biscaia station detected at 20877 kHz.

REF WORRIS' C291825 CRUISING ON "BISCAIA" TO BIAFRA, OUR COMPLIMENTS  
TO HADDEN ON THIS INTERESTING DISCOVERY. WE LOOK FORWARD TO MAILED  
SAMPLE BUT MEANWHILE WILL WELCOME FURTHER OBSERVATION TO NAIL DOWN  
IDENTITY OR LACK OF IDENTITY. BELIEVE TRANSMITTER UNDOUBTEDLY PORTUGAL.  
MOS CHECKED FREQ LATE TODAY ON 20878 KCS APPROX. LISBON-ALFRAGIDE

THUS RADIO BISCAIA IS CONFIRMED AS LISBON, WHICH IN TURN CONFIRMS  
<sup>THE</sup>  
~~THAT~~ AUTHENTICITY OF LUANDA AS THE AFRICAN TERMINAL AS OVERTLY  
INDICATED IN TRAFFIC. 17/1741Z SEP

# Example FBIS daily report

**Mosekwu Statement**  
*Source* Eastern Nigeria Secessionist Radio  
*Date* 18 June 1969  
[\\* show more detail](#)  
*Translated into English and published in:*  
*Report* DAILY REPORT (FBIS-FRB-69-118)  
*Date* 19 June 1969  
Compilation Copyright © 2007 NewsBank, inc. All Rights Reserved

1 of 3 matches

## Mosekwu Statement

Eastern Nigeria Secessionist Radio in English 1200 GMT 18 Jun 69 N

[Text] The commissioner for home affairs, Mr Christopher **Mojekwu**, has challenged Nigeria and her collaborators to accept an internationally supervised plebiscite in

# Example message - raw output

SECRETLSOTWONINETWOF  
ORUGWUMBAANDOFROMONU  
BOGUREPEATEDOB IANDHH  
HYYYCONSTELLATIONDAS  
HNEIGHTSIXFIVETWOFIV  
ELEFTHISMORNINGWITH  
FOURFOURCASESHAMILTO  
NFOURSEVENCASESCONTA  
ININGTHREETHOUSANDRO

# Example message BAL214



Secret LSO 292

For Ugwumba and O from Onubogu \_repeated\_ Obi and H.Y.  
Constellation — N 86525 left this morning with 44 cases Hamilton 47  
cases containing 3000 rounds 20 mm for Lashan ...

Secret LSO 293

For Ugwumba from Onubogu

There are 2 packages weighing about 60 kilos Part 3 follows. in the  
NOMISER [=Some flight or aircraft?] arriving tonight on which is marked  
P. / P. Materials and consigned to H.N. Onubogu. ...

# Example message BAL51

Secret LDB 108

For Ugwumba from KOGBARA repeated O and HY.

Approval is requested for Rev. For Raymond Kennedy general manager Africa Concern KOMATRUH[=Ireland] to enter FLANDIN[=Biafra]. He travels to MITLAR 18th October to position a DC 6 a \_repeat\_ 6 a TUREEN [= airplane] registration number OO GER \_repeat\_ OO GER (BULLIT[= Belgium]) for shuttle to Uli. ...

While in DALFON[=Biafra] Kennedy wants to coordinate:  
(A) Special salt flights with Bishop Okoye ...



# Example message BAL25

Secret FRA 313:

For O from Dr. Obonna.

REF YR TEL FAF 467.

It is necessary to ensure that members of delegation have sufficient foreign exchange before embarking on their trip. I have cases where they could not meet up their hotel bills and police had to be called in ...

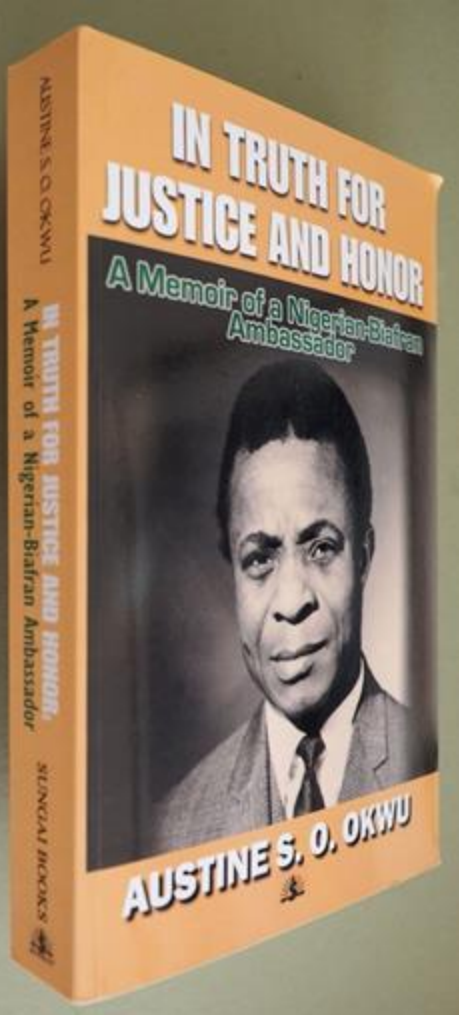
# Names and codewords table

Codeword	Frequency count
DALFON	8
FLANDIN	5
TEYFIK	4
ASHDOD	3
SUCRONY	3
SUVICH	3
TENDENY	3
CODGER	2
GONONEH	2
HEYWOOD	2
HOBOKON	2
HUNABEL	2
KOLLONTAY	2
LUMETIER	2
MITLAR	2
MOSSMAN	2
NOMISER	2
PEDUOR	2
SMIGLEY	2
TUREEN	2
WELKIN	2

Name	Frequency count
Ugwumba	11
Chiji	6
Chris	6
Onubogu	6
Eronini	5
Kogbara	5
Austine	4
Bernhardt	4
Chabert	4
Ugboma	4
Akpan	3
Arthur	3
Emodi	3
Ichoku	3
Iwunze	3
Kennedy	3
Nwachukwu	3
Nwanze	3
Nwogu	3
Nwokedi	3
Obi	3
Obonna	3
Onah	3

# Faces to names

Austine Okwu (5 May 1924-)



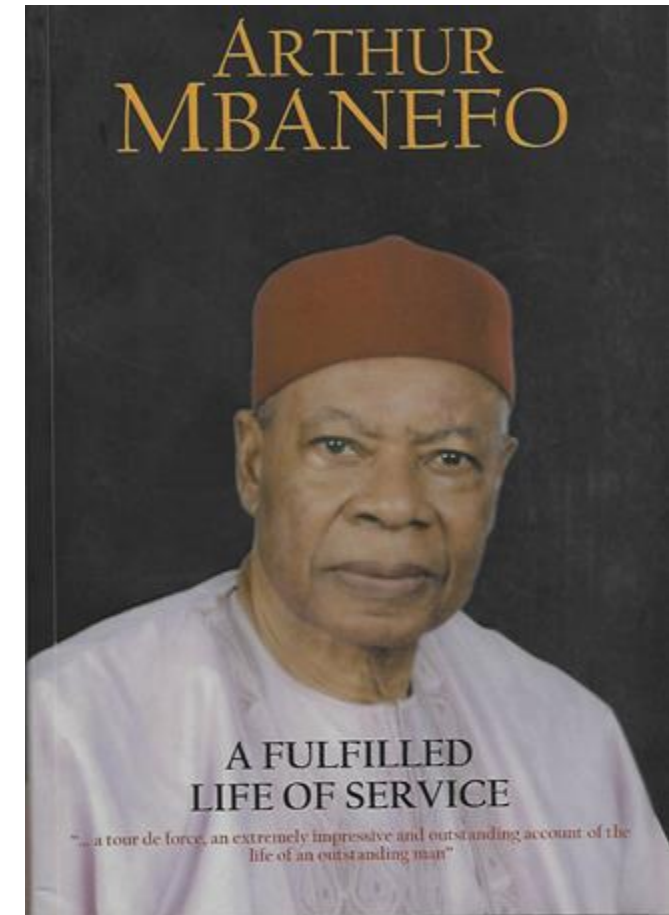
Michael Ugboma, Rome 1969 (Getty) 1928-2020



Prof Sylvanus J Cooley (9 April 1934-)



Arthur Mbanefo (11 June 1930-)



# Lessons (Part One)

- Transposition ciphers are generally easy to identify (frequency count of letters, index of coincidence)
- If there is not much ciphertext, or something outside the standard methods of complete/incomplete columnar transposition, route transposition, or double transposition is being used, solving can be quite difficult
- Modern computers can help – speed, n-gram frequency tables, networks to download source data and read background books

# Lessons (Part Two)

- Collaboration helps
- Stereotyped beginnings and endings of messages help the cryptanalyst – especially as preamble repeated in plaintext
- Further understanding has to come from the protagonists in Nigeria
- Five-figure codes are still unsolved

# Thank you

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Cryptologia

ISSN: (Print) (Online) Journal homepage: <https://www.tandfonline.com/loi/ucry20>



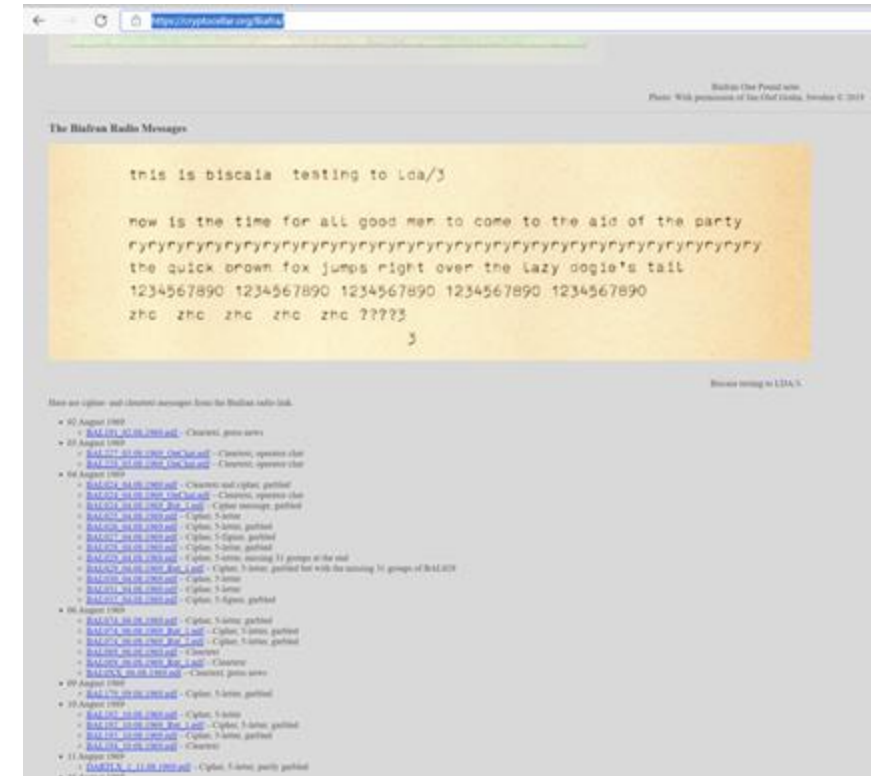
## Eavesdropping on the Biafra-Lisbon link – breaking historical ciphers from the Biafran war

Richard W. Bean, George Lasry & Frode Weierud

To cite this article: Richard W. Bean, George Lasry & Frode Weierud (2022) Eavesdropping on the Biafra-Lisbon link – breaking historical ciphers from the Biafran war, *Cryptologia*, 46:1, 1-66, DOI: [10.1080/01611194.2020.1762261](https://doi.org/10.1080/01611194.2020.1762261)

To link to this article: <https://doi.org/10.1080/01611194.2020.1762261>

Cryptologia paper



[Frode Weierud's CryptoCellar  
The Biafran Ciphers](https://cryptocellar.org/Biafra)

<https://cryptocellar.org/Biafra>