

OVERLAPPING SEQUENCES

Susan Thorpe
Great Missenden, Buckinghamshire, England
thorped@hotmai.com

Starting with two or more generic sequences, there are several ways in which they may be arranged in relation to each other, sometimes forming a word. The sequences may:

1. follow on from each other (*Sequential Words* WW2005003).
2. interlock (*Unique Generic Locks* WW2007251)
3. occur one within another (*Sequences Within* WW2007342)
4. overlap

In 1, 2 and 3 above, the sequences do not share any letters. In 4, they share letters.

Overlapping Sequences investigates category 4.

The genres of sequences considered are palindromic (P), tautonymic (T), Miami (M) and ladder (L). The reader is directed to *Miami Words* (WW2000014) and *Ladder Words* (WW2002279). The sequences may be of the same genre or different genres. The first and last letters of a word are not admitted as overlapping letters. Single letter overlaps are not included. Examples for certain of the overlap combinations which are absent from sections 1 – 16 below can be found in section 17. *Alternative Overlaps*.

Miami sequences (letter pattern 12?12) in which the middle letter ? is a repeat of one of the other 2 letters (1 or 2) are not included in the current exercise. For the present purpose, a ladder sequence is deemed to have 9 letters. The 3 trigrams of which the ladder sequence is formed must all be different. There are nine possible such 9-letter ladder sequences. Their letter patterns are identified by superscript numbers:

123.423.523 ¹	123.423.453 ²	123.423.425 ³
123.143.543 ⁴	123.143.153 ⁵	123.143.145 ⁶
123.124.524 ⁷	123.124.154 ⁸	123.124.125 ⁹

As well as being constructed from overlapping sequences, some of the words listed can also be viewed as Sequential Words (see 1 above). These are identified by *SW*.

Many of the words are locations. Identified by country, these are taken from the United States Board on Geographic Names. Unreferenced words can be found in the Oxford English Dictionary, Second Edition. Other references:

cham = Chambers English Dictionary; *dor* = Dorland's Medical Dictionary; *web2/3* = Webster's 2nd/3rd Edition.

In sections 1-16, the lists of words read across the page.

1. TWO OVERLAPPING PALINDROMIC SEQUENCES

2-letter overlap

3P over 3P	MAMA and other 4-letter tautonyms	3P over 4P	PAPPA
3P over 5P	KOKAKO (the New Zealand Wattle-bird)	3P over 6P	NANUUAN (Russia)
3P over 8P	RNRGRRGRN (a Yurok Indian place name)		
4P over 3P	ANNAN, AZZAZ, BEEBE, DEEDE, ELLEL, ERRER, PEEPE, REERE, VEEVE		
4P over 4P	ESSEES	4P over 5P	ARRACAR (<i>cham</i>), ESSENES (Essene)
4P over 6P	AN-NASSAN (Bahrain)	4P over 7P	AKKAYLYAK (Kazakhstan) \-1784 cit.)
5P over 3P	REVERE and many more	5P over 4P	CASACCA, LEVELLE, REFERRE
5P over 5P	REPERIRE, TEPETATE	5P over 7P	TLALTEPETL (Mexico)
6P over 3P	CARRACA (a galleon), TAFFATA	6P over 4P	TERRETTE (France)
7P over 3P	MESOSEME	7P over 4P	LEUQUELLE (Spain)
9P over 3P	CALAJALACA (Bolivia)	10P over 3P	MAGALLAGAMA (Sri Lanka)

3-letter overlap

4P over 5P	TEETEE (diving Petrel), ZOOZOO (wood-	4P over 6P	SAASSAA (Syria)
5P over 5P	OIIOID (<i>web2</i>), TELETEL \pigeon)	5P over 6P	METEMMET (Eritrea)
6P over 5P	GUNNU-GUN (Japan)	6P over 6P	ALEELAAL (Somalia)
7P over 5P	ROOCOOROO (of a pigeon - to coo)		

4-letter overlap

5P over 7P COROCORO (a type of boat) + other 8-letter tautonyms with letter pattern 12321232. 5P+3P SW

5P over 9P KIRIKAKIRI (Nigeria)

5-letter overlap

6P over 9P CORROCORRO (a type of boat) + other 10-letter tautonyms with pattern 1233212332. 6P+4P SW

6-letter overlap

7P over 11P BITITI-BITITI (Congo Republic) a 12-letter tautonym with pattern 123232123232. 7P + 5P SW

2. TWO OVERLAPPING TAUTONYMIC SEQUENCES

2-letter overlap

4T over 6T EDEDJEDJ (Algeria)

4T over 8T IRIRIMIRIM (Brazil) 5P + 5P SW

6T over 4T AKOAKOKO (Ghana) M + 3P SW

8T over 4T JHUNJHUNUN (India)

3-letter overlap

4T over 8T PA-PA-NA-PAN (Taiwan)

3. TWO OVERLAPPING MIAMI SEQUENCES

2-letter overlap

M over M KALKASKA (Michigan, USA)

4-letter overlap (the maximum possible for M over M)

M over M 6-letter tautonyms such as ATLATL, BERBER, CANCAN, DUMDUM, ENTENT, FURFUR, GANGAN (a cockatoo), HAWHAW, ILOILO, JAWJAW, KUSKUS, LOGLOG, MURMUR, NAGNAG, ONEONE, PAWPAW, QUAQUA, RAHRAH, SOUSOU, TARTAR, UNUNS, VERVER, WAHWAH, XINXIN (China), YENYEN, ZIGZIG

4. TWO OVERLAPPING LADDER SEQUENCES

5-letter overlap

L¹ over L⁹ BOULOUMOUNOUA (Congo Republic)

L² over L³ BANTANTINTING (Senegal)

7-letter overlap

L¹ over L⁵ HOELOEBOEGO (Indonesia)

L¹ over L⁶ KOUROUNOUNA (Mali)

L² over L⁸ KUNGUNGANDA (Tanzania)

L² over L⁹ OBERBERGERN (Austria)

L⁴ over L⁵ KINKONDONGO (DR Congo)

L⁴ over L⁹ NHANGANZANE (Mozambique)

8-letter overlap

L¹ over L⁹ PERVERTERS, TANZANIANS, HERBERGERY

L⁶ over L² HASHISHIAH (Yemen)

L⁹ over L⁵ CHACHOCHIC (Mexico)

5. PALINDROMIC SEQUENCE OVERLAPPING TAUTONYMIC SEQUENCE

2-letter overlap

3P over 6T AGAMGAM (Morocco), EFELFEL (Mali)

3P over 8T OYOLEYOLE (DR Congo)

3P over 10T ORONGORONGO (New Zealand)

3P over 12T OGLOUGOULOLOU (Togo)

4P over 4T DEEDED

5P over 4T CIMICIC, REVERER

5P over 6T REVERSERS

6P over 4T OKA-AKOKO (Nigeria)

3-letter overlap

5P over 8T NAWANUWANU (Fiji)

5P over 10T NAKANDIKANDI (Fiji)

4-letter overlap

5P over 8T PARAPARAP (Australia) a palindrome with alternating letters A

6. PALINDROMIC SEQUENCE OVERLAPPING MIAMI SEQUENCE

2-letter overlap

3P over M EYETYE, LELWEL, NONION, TITBIT

4P over M XAAXKAX (Mexico)

5P over M NEWENDEN (UK), REVERTER

6P over M NIPPING-IN (see 'wringing', *vbl.*
| n.l.c.1839 citation)

7. PALINDROMIC SEQUENCE OVERLAPPING LADDER SEQUENCE

2-letter overlap

3P over L ¹	C <u>A</u> CH <u>I</u> CH <u>O</u> CH (Guatemala)	3P over L ²	HO <u>H</u> EN <u>H</u> EN <u>N</u> E (Germany)
3P over L ³	R <u>O</u> R <u>B</u> ER <u>B</u> ER <u>G</u> (Austria)	3P over L ⁷	NON <u>C</u> ONT <u>E</u> NT
3P over L ⁹	N <u>A</u> NS <u>A</u> NS <u>A</u> NS <u>A</u> NG (South Korea)		

8. TAUTONYMIC SEQUENCE OVERLAPPING PALINDROMIC SEQUENCE

2-letter overlap

4T over 4P	OG <u>O</u> G <u>O</u> (Ethiopia)	4T over 5P	RE <u>R</u> E <u>F</u> ER, UL <u>U</u> L <u>A</u> LU
4T over 6P	SU <u>S</u> UR <u>R</u> US	4T over 7P	SA <u>S</u> AR <u>A</u> R <u>A</u> S
6T over 3P	BAR <u>B</u> AR <u>A</u> , T <u>S</u> ET <u>S</u> ES	6T over 4P	CIN <u>C</u> IN <u>N</u> I, CUS <u>C</u> U <u>S</u> SU
6T over 5P	CI <u>U</u> CI <u>I</u> LU <u>I</u> (Romania)	8T over 3P	AN <u>A</u> PAN <u>A</u> PA (web2)
8T over 4P	BUN <u>A</u> BUN <u>A</u> AN (Philippines)		
10T over 3P	IN <u>D</u> ELIN <u>D</u> E (Congo Republic)	10T over 4P	KOU <u>A</u> NKOU <u>A</u> NN <u>A</u> (Mali)
10T over 5P	ANTAN <u>A</u> NTAN <u>A</u> NA (Madagascar) an M + M + 3P SW and also a 10T + 3P SW		

3-letter overlap

8T over 5P	GHARG <u>H</u> AR <u>A</u> H (Afghanistan)	10T over 5P	QUIN <u>A</u> QUIN <u>A</u> NI (Peru)
------------	--	-------------	---------------------------------------

9. TAUTONYMIC SEQUENCE OVERLAPPING MIAMI SEQUENCE

2-letter overlap

4T over M	UN <u>U</u> NG <u>U</u> N (web2)	6T over M	RED <u>R</u> ED <u>G</u> ED
8T over M	CURIC <u>U</u> RI <u>A</u> RI (Brazil)	10T over M	BILAN <u>B</u> IL <u>A</u> NGAN (Philippines)
14T over M	JANG <u>A</u> NGJANG <u>A</u> NGANG (Indonesia)		

3-letter overlap

8T over M	CANIC <u>A</u> NIAN (Philippines)
-----------	-----------------------------------

10. TAUTONYMIC SEQUENCE OVERLAPPING LADDER SEQUENCE

2-letter overlap

4T over L ¹	BO <u>B</u> O <u>E</u> LO <u>E</u> TOE (Indonesia)	6T over L ⁹	KOEK <u>O</u> E <u>M</u> O <u>E</u> IO <u>E</u> (Indonesia)
------------------------	--	------------------------	---

11. MIAMI SEQUENCE OVERLAPPING PALINDROMIC SEQUENCE

2-letter overlap

M over 3P	SEN <u>S</u> ES, RE <u>A</u> R <u>E</u> R	M over 4P	INC <u>I</u> NNI (Ethiopia)
M over 5P	DE <u>A</u> D <u>E</u> N <u>E</u> D	M over 6P	RED <u>R</u> ESS <u>E</u> R
M over 7P	ANJ <u>A</u> NAZ <u>A</u> NA (Madagascar)		

3-letter overlap

M over 5P	IWL <u>I</u> WIL (Morocco)
-----------	----------------------------

12. MIAMI SEQUENCE OVERLAPPING TAUTONYMIC SEQUENCE

2-letter overlap

M over 4T	CIV <u>C</u> ICI (Bosnia & Herzegovina) - a Roman numeral location		
M over 6T	INR <u>I</u> NG <u>I</u> NG	M over 8T	TANT <u>A</u> RAT <u>A</u> RA

3-letter overlap

M over 8T	ANJ <u>A</u> NOJ <u>A</u> NO (Madagascar)	M over 12T	ANK <u>A</u> NTSAK <u>A</u> NTSA (Madagascar)
-----------	---	------------	---

4-letter overlap

M over 8T	ER <u>H</u> ERR <u>H</u> ER (Mali)	M over 10T	O' <u>N</u> YONG- <u>N</u> YONG (a virus disease in East Africa)
M over 14T	NG <u>E</u> NG <u>E</u> REG <u>E</u> NG <u>E</u> RE (Tanzania)		

13. MIAMI SEQUENCE OVERLAPPING LADDER SEQUENCE

3-letter overlap

M over L³ OKUOKPOKPOR (Nigeria)

4-letter overlap

M over L⁵ CHACHOCHIC (Mexico)

M over L⁶ INRINGINGS

14. LADDER SEQUENCE OVERLAPPING PALINDROMIC SEQUENCE

2-letter overlap

L¹ over 3P HERBERGERE, PERVERTERE

L² over 3P BIRKIRKARA (Malta)

L² over 5P SANT'ANTONINO (Italy)

L⁵ over 3P OTIOBIOSIS (*dor*)

L³ over 4P MISSISSIPPI

L³ over 5P MANGANGARARA (New Zealand)

L⁹ over 3P PAMPAYPATA (Peru)

L⁹ over 4P CONCORCOLLO (Bolivia)

15. LADDER SEQUENCE OVERLAPPING TAUTONYMIC SEQUENCE

2-letter overlap

L¹ over 4T PANOANDANAN (Philippines)

6-letter overlap

L¹ over 12T MOUKOULOUKOLOU (Congo Republic)

16. LADDER SEQUENCE OVERLAPPING MIAMI SEQUENCE

3-letter overlap

L⁹ over M OUTOUKOLOU (Chad)

4-letter overlap

L² over M XIANIANWAN (China)

L³ over M IKOUKOMOU (Congo Republic)

17. ALTERNATIVE OVERLAPS

The same word may afford alternative overlapping sequence combinations.

TWO SEQUENCES OVERLAP

A combination of P and/or T sequences

3P over 7P KUKURUKU (*web2*)

5P over 5P AIAIAI, HAHAHA etc. (letter pattern 121212)

4T over 7P KUKURUKU

5P over 4T AIAIAI, HAHAHA 3P + 3P *SW*

4T over 4T AIAIAI, HAHAHA

4T over 5P AIAIAI, HAHAHA

7P over 5P ANALANANA (Madagascar)

7P over 7P ANAHANAHANA a 3P-8T and an 8T-3P *SW*

7P over 4T ANALANANA

7P over 8T ANAHANAHANA

8T over 7P ANAHANAHANA (Madagascar)

3P over 4T IGIGI (*web3*), AJAJA (*web2*)

4T over 6P KOKOKO (Ghana) 4T + 3P *SW*

4T over 3P IGIGI, AJAJA

4T over 6T KOKOKO

8T over 4T CHEHCEHEH (Turkmenistan)

8T over 5P CHEHCEHEH

A combination of P and/or L sequences

L¹ over 4P GALWALALLA (Sri Lanka)

A combination of T and/or M sequences

6T over 8T QUEQUESQUES (Honduras)

L¹ over L⁷ GALWALALLA

M over 8T QUEQUESQUES

6T over M ALFALFA ENTENTE GINGING HATHHATH KUCKUCK PREPREP SEMSEMS TZITZIT

M over 6T ALFALFA ENTENTE GINGING HATHHATH KUCKUCK PREPREP SEMSEMS TZITZIT

M over M ALFALFA ENTENTE GINGING HATHHATH KUCKUCK PREPREP SEMSEMS TZITZIT

(*web2*)

(*cham*)

(*web2*)

A combination of M and/or L sequences

M over L^1	OUTOUK <u>OU</u> LOU (Chad)	M over L^4	OUROUKONKO (Guinea) M + M SW
L^9 over M	OUTOUK <u>OU</u> LOU	L^8 over M	OUROUKONKO
M over L^1	KONK <u>OU</u> DOUGOU (Ivory Coast)	L^1 over M	TYARYAKY <u>AM</u> YA (Azerbaijan) a 12-letter,
L^7 over M	KONK <u>OU</u> DOUGOU	L^1 over L^1	TYARYAKY <u>AM</u> YA \4-step ladder word
L^7 over L^1	KONK <u>OU</u> DOUGOU		

A combination of P, T, M sequences

$5P$ over $6T$	KISIK <u>S</u> IK (Nicaragua)	$6T$ over $5P$	HAL <u>H</u> ALAH (Yemen)
$5P$ over M	KISIK <u>S</u> IK	M over $5P$	HAL <u>H</u> ALAH

A combination of P, T, L sequences

L^2 over $4P$	TOCCOCC <u>AC</u> CA (Peru)
L^2 over $6T$	TOCCOCC <u>AC</u> CA

A combination of T, M, L sequences

$6T$ over L^1	KOEK <u>O</u> EROEBOE (Indonesia)	$6T$ over L^5	KONKONDONGO (DR Congo)
M over L^1	KOEK <u>O</u> EROEBOE	M over L^5	KONKONDONGO
$6T$ over L^6	KHAKHACH <u>ACA</u> (Bolivia)	$6T$ over L^8	VARVARIANI (Greece)
M over L^6	KHAKHACH <u>ACA</u>	M over L^8	VARVARIANI
$6T$ over L^9	JENJENJ <u>ET</u> JEM (Sweden)	$6T$ over L^9	TINTIN <u>N</u> NINA - a Protozoan Suborder
M over L^9	JENJENJ <u>ET</u> JEM	M over L^9	TINTIN <u>N</u> NINA
$12T$ over M	TOUKOUTOUK <u>OU</u> ZOU (Ivory Coast)		
$12T$ over L^1	TOUKOUTOUK <u>OU</u> ZOU		
L^1 over $6T$	KOUBOU <u>L</u> OULOU (CAR)	L^1 over $6T$	PAND <u>ANG</u> ANG (Indonesia)
L^1 over M	KOUBOU <u>L</u> OULOU	L^1 over M	PAND <u>ANG</u> ANG
L^2 over $6T$	NANKANK <u>ON</u> KO (Zambia)	L^7 over $6T$	AGYAG <u>ONG</u> ON (Philippines) M + M SW
L^2 over M	NANKANK <u>ON</u> KO	L^7 over M	AGYAG <u>ONG</u> ON

18. MULTIPLE OVERLAPS

So far, all the examples have a single overlap. Here are a few words with more than one overlap.

ONE OR TWO OVERLAPS

L^9 over M	OUKOU <u>L</u> OUROU (Burkina Faso)	L^1 over L^1	SOULOU <u>K</u> OU <u>D</u> OU <u>G</u> OU (Guinea)
M over L^1	OUKOU <u>L</u> OUROU	L^1 over M over M	SOULOU <u>K</u> OU <u>D</u> OU <u>G</u> OU
M over L^5 over M	OUKOU <u>L</u> OUROU	L^1 over L^1 over M	SOULOU <u>K</u> OU <u>D</u> OU <u>G</u> OU
M over M over M	OUKOU <u>L</u> OUROU		

TWO OVERLAPS

These words contain an embedded sequence which is overlapped at both its ends by 2 other sequences:

$3P$ over L^2 over M	KIKOU <u>K</u> OU <u>T</u> O (Congo Republic)	$4T$ over L^1 over $6T$	PAP <u>AN</u> D <u>AN</u> G <u>AN</u> G (Indonesia)
		$4T$ over L^1 over M	PAP <u>AN</u> D <u>AN</u> G <u>AN</u> G
M over $5P$ over $4T$	AND <u>AN</u> ON <u>AN</u> A (Madagascar)	M over M over M	AWG <u>AW</u> G <u>AW</u> RAW (Nigeria)

THREE OVERLAPS

This is a rare word indeed!

M over M over $6T$ over M	OUKOU <u>R</u> OU <u>K</u> OU <u>K</u> OU (Benin)
M over M over M over M	OUKOU <u>R</u> OU <u>K</u> OU <u>K</u> OU