

MORE WORD NETWORK SPANS IN THE OSPD

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In the February 1989 *Word Ways*, I examined various word networks based on words from the Official Scrabble Players Dictionary (OSPD). To refresh the reader's memory, a **word network** consists of a set of words of a given length that can be joined by word ladders (single-letter changes). Each pair of words in a word network can be connected by a minimum-length ladder (one which cannot be reduced by any alternative ladder). The **span** of a network is defined as the number of words in the longest such minimum-length ladder, considering all possible word-pairs in the network. For example, the minimum-length ladder connecting INCH to AMYL requires 14 steps (INCH-itch-etch-each-eath-eats-wats-wits-aits-ants-anis-anil-aril-aryl-AMYL), and there are no pairs of words in the network having a minimum-length ladder of 15 or more. In the earlier article, I ascertained that the spans of the main networks for 4-letter, 5-letter and 6-letter OSPD words are 14, 29, and 40 (see the correction in the November 1989 Colloquy), respectively.

In this article, I extend the study to 7-letter and 8-letter word networks. My OSPD dictionary has been augmented by approximately 1500 7-letter and 8-letter words from the WordPerfect Spelling Checker (WPSP) and Chambers Twentieth Century Dictionary. In all, there are 22,900 7-letter words in my database; the main network contains 7,413 of these. The span (all OSPD words) is 59:

ANLAGEN-anlages-anlaces-unlaces-unlades-unladed-unfaded-unfazed-unrazed-unrated-unsated-unbated-unbased-uncased-uncases-uneases-ureases-creases-creesses-crosses-crosser-crasser-crasher-brasher-brasier-brakier-beakier-peakier-peckier-pockier-rockier-rookier-rookies-hookies-honkies-hankies-hackies-hackles-heckles-deckles-deciles-defiles-defiled-deviled-reviled-reveled-raveled-ravened-havened-havered-wavered-watered-catered-capered-tapered-tabered-tabored-taboret-tabaret-CABARET

Ross Eckler has suggested that networks contain loosely-connected "clouds" of words. I have not found that to be true for shorter words, but it may be true for 7-letter networks. Note that the span ladder does not include any words in what might be expected to be the densest part of the network: words ending in -ING. Checking for connections between -ING land and ROOKIES, I found JERKINS, BOBBINS, ROBBINS, BIGGINS, CODLINS and more; apparently -ING land is loosely connected but not so much that it can be readily identified.

One can characterize the main network by listing the number of words found 1, 2, ... steps from PARTING, one of the most high-

ly-connected in the network with 15 next-door neighbors:

steps	words								
1	15	8	162	15	334	22	176	29	63
2	78	9	208	16	281	23	140	30	35
3	228	10	360	17	300	24	113	31	25
4	390	11	507	18	354	25	104	32	17
5	372	12	586	19	401	26	101	33	8
6	237	13	505	20	344	27	95	34	3
7	155	14	304	21	248	28	80	35	3

There are 26,794 8-letter words in my database. The largest network contains only 982 of them, almost all ending in -ING; the second-largest contains 438, all but four of which (SHIPPONS, STRIDORS, CRITTURS, CHANTORS) contain E in the sixth position. The span is 25:

QUIRKING-quirting-quilting-quilling-quelling-duelling-dwelling-swelling-stelling-stalling-stalking-stacking-slacking-clacking-claching-coaching-poaching-peaching-perching-parching-patching-batching-bitching-birching-birthing-BERTHING

Let us define **minimal**, **ideal** and **complete** word ladders as follows. If L is the number of letters in a word, N the number of letters changed in the ladder, and S the number of steps, then a ladder is

- minimal if $S = N$, N less than L
- ideal if $S = N$, $N = L$
- complete if S greater than L , $N = L$

Here are a number of minimal or ideal 7-letter ladders:

FELLOWS-felloes-fellies-fillies-gillies-GIRLIES
 SINNERS-tinners-tonners-conners-confers-CONFESS
 BLOCKED-blacked-blanked-clanked-clanged-changed-CHANGES
 KNOCKED-knacked-snacked-shacked-sharked-sharped-sharpey-SHARPLY
 SETTLES-settees-setters-betters-beaters-beavers-bravers-BRAVERY
 COSTARS-costers-coaters-craters-cravers-bravers-bravery-BRAVELY
 CUSTARD-costard-costars-costers-copters-coppers-moppers-MOPPETS
 POSTMEN-posteen-postern-pastern-pasters-basters-banters-BANKERS
 BANKERS-banters-batters-betters-setters-settees-settles-SETTLED
 PLAYERS-platers-slaters-seaters-setters-settees-settles-SETTLED
 JUNKIES-punkies-punties-putties-puttees-putters-patters-PATTERN
 CONDOMS-condors-candors-cantors-canters-banters-batters-BATTERY
 CUTLERY-cutlers-cutters-putters-puttees-putties-patties-PARTIES
 PISTOLS-pistils-pastils-pasties-parties-partied-parried-MARRIED

snowman-showman-shopman-shipman shipped=whipped=chipped-clipped
 snowmen-showmen-shopmen-shipmen-shippen-shipper=whipper=chipper-clipper
 skipper
 skippet

There are several ideal sequences in the above network. I have not been able to find any 8-letter ideal ladders; Kyle Corbin reported one in the May 1988 **Word Ways** using words from Webster's Third. However, here are some minimum ones:

SNOBBERY-slobbery-slobbers-slubbers-slumbers-plumbers-plumpers-PLUMPENS
 REVERSOS-reverses-reversed-reverted-revested-devested-divested-DIGESTED
 DIGESTOR-digester-digested-divested-devested-revested-reverted-REVERSED
 REMITTOR-remitter-remitted-reminted-reminded-remanded-demanded-DESANDED

The following ladder is complete but far from ideal:

CHANTORS-chanters-chatters-clatters-platters-plasters-plashers-clashers-
 claspers-clappers-clippers-slippers-skippers-skippets-snippets-SNIPPETY

Finally, here are a number of ladders that are not complete, minimal, or ideal, but have interesting terminals:

CHICKEN-thicken-thicker-tricker-tricked-cricked-clicked-clucked-PLUCKED
 CHICKEN-thicken-thicker-tricker-pricker-prinker-printer-pointer-jointer-
 jointed-joisted-hoisted-hoister-moister-mobster-LOBSTER
 KEISTER-heister-hoister-roister-roaster-coaster-chaster-charter-charted-
 charked-sharked-sparked-SPANKED

SOUTHERN-southers-soothers-smothers-smothery-smithery-slithery-slithers-
 slathers-slashers-plashers-plasters-PLANTERS
 WITCHERY-bitchery-butchery-butchers-batchers-patchers-pitchers-pinchers-
 punchers-lunchers-LYNCHERS

A TOPICAL SLANG DICTIONARY

Slang!, by Paul Dickson, is a \$9.95 Pocket Book paperback collection of some 5000 up-to-date slang terms, grouped in 24 categories from "Advertising and Public Relations" to "Yuppies, Dinks, and Other Moderns". Here can be found such goodies as Melody Hill anemia (drunk on cheap wine) and Botts' dots (raised reflective pavement markers).

The book is ideally designed to explore the cross-fertilization of slang; terms such as *bug* or *zap* are found in several subject areas. Consider the following list of terms from Dickson's book, in which each word or phrase on the right apparently goes with the next-lower category on the left (*catcher's mitt* a sports term, *bomb* war slang, etc.). In reality, each term is correctly placed (*catcher's mitt* is a diaphragm, *bomb* a long football pass, etc.).

sex, body functions	<i>catcher's mitt</i>
sports slang	<i>bomb</i>
war slang	<i>scrambled eggs</i>
food and drink	<i>open dating</i>
teen slang	<i>floppy disk</i>
computerese	<i>virus</i>
medical slang	<i>organ recital</i>
performing arts slang	<i>points</i>
real estate	<i>crank</i>
automobile slang	<i>submarine</i>
nautical slang	<i>screw</i>