

8-LETTER AND 9-LETTER WORD NETWORKS

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My first contributions to **Word Ways** were on word ladders and networks. In "Word Network Spans in the OSPD" in Feb 1989, I analyzed 4-letter, 5-letter and 6-letter word lists; in "More Network Spans in the OSPD" in Aug 1990 I briefly studied 7-letter and 8-letter words. This was the limit of my computer capabilities at the time. Since then I have doubled the size of my lists, mostly with Webster's Second words, but I have also upgraded my computer and DOS. Here is a new study of 8-letter and 9-letter words. Part of my objective was to find ideal ladders: ladders in which all eight letters of a word change in eight steps. One ideal ladder was known in 1990; many additional ones are identified below.

Of my 47,650 eight-letter words, 21,348 are isolanos (are connected to no other words by single-letter changes) and 13,409 are enders (connect to only one other word). 8,906 of the latter form pairs. The other 4,503 are in my working list of 17,396.

The largest net, MAIN, contains 2,899 words. The span is 73 steps, DEAFNESS to RURALITY, diagrammed below. Horizontal word sets connected by =, and vertical word sets in italics, share the same letter change; one can step from any word to any other word in such sets, ignoring intermediate words if necessary. Highly-connected words are SLATTERS (13), SPELLING (12) and SNACKING (12). Although MAIN contains a large group of -ing words, not all of the -ing words in the working list are there. Part of a second network containing 208 mostly -ing words is also depicted; its span is 22. Other -ing words are scattered among the smaller nets.

There are nine ideal ladders in MAIN, in three different groups:

crampits-crampets-crampers-clampers-clambers-clabbers-slabbers-
slabbery-slobbery
crampits-crampets-crampers-clampers-clambers-clabbers-clubbers-
blubbers-blubbery
crispers-crispens-crispins-crisping-crimping-crumping-clumping-
plumping-plumbing
crispers-crispens-crispins-crisping-crimping-crumping-trumping-
thumping-thumbing
crappoes-crappies-crappins-crapping-trapping-tramping-trumping-
thumping-thumbing
crappoes-crappies-crappins-crapping-clapping-clamping-clamming-
slamming-slumming
crappoes-crappies-crappins-crapping-clapping-clasping-clashing-
flashing-flushing
crappoes-crappies-crappins-crapping-chapping-chipping-chipling-

chilling-shilling
 crappoes-crappies-crappins-crapping-chapping-chipping-chirping-
 chirking-shirking

RURALITY-ruralite-ruralise-ruralist-muralist-moralist-modalist-medalist-
 metalist-metalise-metaline-metaling-medaling-meddling-middling-diddling-
 daddling-dandling-dangling-dargling-gargling-garbling-warbling-warsling-
 warsting-waisting-whisting-whisking-----+

		flushing				
	crappoes	flashing				
	crappies	clashing			whipping	
	crappins	clasping	whapping--	whipping		
trapping--	crapping==	clapping==	chapping--	chipping--	chirping	
tramping--	cramping--	clamping		chipling--	chirking--	shirking
trumping--	crumping--	clumping	clamming	chilling	charking	
thumping	crimping	plumping	slamming	shilling	chacking	
thumbing	crisping	plumbing	slumming	shelling	shacking	
	crispins			stelling	snacking	
	crispens			spelling	snecking	
	crispers			spelking--	specking	
	crimpers					

crampets--	crampers--	trampers-----	+
crampits	clampers		
	clambers		
slobbery	clabbers--	clubbers	
slabbery--	slabbers	blubbers	
		blubbery	

wormless-gormless-germless-termless-teamless-tramless-trampess-+
 tackless-tankless-tangless-pangless-waneless-wandless-wardless-wordless-
 willness-wildness-mildness-milkness-silkness-sickness-sickless-sackless-
 DEAFNESS-deariness-nearness-neatness-featness-feltness-fellness-wellness-

relaying--belaying
 resaying bellying
 resawing bullying
 resowing sullying
 resoling sallying
 resiling DALLYING
 reviling
 reveling

ravelins--raveling
 javelina==javeline==javelins ravening
 havening
 havering
 SOGERING--sobering tavering
 sabering--tabering
 taboring--tabooing
 JABORINE--taborine TATOOING
 TABORINS

The second largest network has 911 words. Most of the words have N in

the second and E in the seventh position. Highly-connected words are UNMAILED (14), UNSEARED (13), UNMASTED (12) and UNLOCKED (10). The span is 20, EXPENSES to UNRUINED. The ideal ladders are

uprushed-unrushed-unrusted-unrested-unvested-invested-invented-
 inverter-inventor
 uprushed-unrushed-unrusted-unrested-unvested-invested-invented-
 inverter-inventor
 untested-untended-untended-untender-entender-extender-expender-
 expander-expandor

				UNRUINED	
				unreined	
			unlocked	unveined	
		EXPENSES	unlooked	unveiled	
		expensed	uncooked	unceiled	
	expandor	expended	uncooled--uncoiled		
sprushes	expander--expender				
sprushed		extender	unbailed--unboiled		
uprushed		entender	unmailed	unbolloed	
unrushed		untender		unbolted	
unrusted	untended--untended			unbelted	
unrested==unvested==untested		unbended			
		unbeaded-----unbeated			
invented==inverted==invested		unheaded			inflatus
inverter==invester==inventer		unhealed--unsealed--unseated			inflates
invertor==investor==inventor					inflated
			unplated==unslated==unflated		
			unplanned	unstated	
			enplanned	unstaged	
			emplaned	upstaged	
			emplaced	upstages	
			emplaces	upstares	
				upstarts	

The third largest network contains 336 words, almost all ending -iest. The span is 19, HEDGIEST to HAPPIEST. The only non -iest words are FOOTREST, HANDREST, HEADREST-HEADRENT, SOOTHEST, DOTTEST, and TALKFEST. This net is not diagrammed here.

The fourth largest network has 311 words. The span is 20, HOLDINGS to OUTMODED. The ideal ladders are

carpings-carlings-catlings-cutlings-cutlines-outlines-outlives-
 outloves-outloved
 carlings-catlings-cutlings-cutlines-outlines-outlives-outloves-
 outmoves-outmoved

Various other words such as CARTINGS and CARVINGS can be substituted for CARPINGS.

HOLDINGS

hildings
 wildings
 windings
 bindings
 biddings
 beddings outmodes--OUTMODED
 beadings outmoves--outmoved
 beatings outgiven outloves--outloved
 bettings outgives--outlives--outlived
 nettings outlines--outlined
 nuttings cutlines
 cuttings-----cutlings carvings
 callings==catlings==carlings--carpings

The net with the second longest span, 26, OVERBOWL to OVERSPIN or OVERSPUN, contains 245 words. All but OVENWISE-EVENWISE begin with the prefix over-. It is not diagrammed. Two highly connected words, BATTERED (13) and PATTERNED (12), are found in a small net of 199. The span is 17, FILTERED to SAGGARED. All words in this net have E in seventh position. There are a few other nets with more than 200 words apiece.

Two small nets produced the following ideal ladders:

gestosis-gestoses-cestoses-cestuses-costuses-contuses-confuses-
 confutes-confuter (or confuted)
 myringas-syringas-syringes-springes-springer-sprinter-splinter-
 splitter-splutter (or splatter)

* * * *

The analysis of 9-letter words is not very productive. Of my 48,945 words, 28,054 are isolanos. Most of the remainder are in networks of two or three. There are a few networks with more than 100 words, but most contain all -ness or -iest or a similar suffix. The next page depicts the only fairly interesting net I found. It contains 161 words, and the span is 29, from UNPAUSING to UNDERLOUT. There are changes in each of the nine letter-positions, but there is no pair of non-crashing words, let alone an ideal ladder. In the places where N has changed to P, the P is always preceded by U. Are there any 9-letter words beginning op- or ap- that can be tied in? Are there any udderkind of words we can use?

