LOOK BACK!

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Over the years Word Ways has displayed a varied logological corpus. In this column I revisit forgotten ideas, connect seemingly-disparate concepts, and suggest further investigations.

The word DISROBE can be dissected into two constituent words, DIRE and SOB; the letters in the shorter words both appear in their correct order in the parent one. The National Puzzlers’ League calls puzzles based on words of this nature word interlocks. The concept was first proposed by Archimedes in the June 1945 issue of The Enigma. He gave examples such as PlcTure, POSTure, RAMPart, PURPose and LAMrPoon in which the interlock was minimal, consisting of the first letter of the second word preceding the last letter of the first word. More elaborate examples like BALCONies and PirATE he called word weaves, but this terminology never caught on; nowadays all are called interlocks. He even proposed multiple-word interlocks such as StalAGmite (sag, tame, lit) and PeRversiTY (pry, ever, sit).

However, the idea never caught on. It was reintroduced by Brutus in the April 1977 Enigma; fourteen puzzles appeared in the June through December issues, including a reversal (TriLaNgleS: SNIT, elgar) and a double one (FIRearMs, FiReaRmS).

Special cases of the interlock were already known. The oldest was the charade (CHARTreuse) which long preceded the National Puzzlers’ League as a puzzle type. According to Wil Shortz in “Early American Word Puzzles” in the November 1974 Word Ways, the charade appeared in the February 1752 issue of the London magazine (PORTSmouth), and by 1769 one had appeared in the Philadelphia Penny Post.

Arcanus presented the word deletion in the August 1929 Enigma, in which a constituent word is taken from the interior of the parent and the ends pushed together to form a second constituent word (COMPLEXities). In the February 1973 Enigma, Tut generalized this to the progressive word deletion (MEDicamenT: came, din, met).

The third special case is the alternade, in which the odd letters of the parent form one constituent, and the even letters another. The first example of this, by L’Allegro, appeared in the May 1917 Eastern Enigma, showing that SCHOOLD contains SHOE and COLD. During the next 42 years, 60 alternades on 44 different parent words were published. The most noted of these was the eleven-letter TRIENNALLY, factoring into TINILY and RENAL, discovered by Dorse and appearing in the September 1949 Enigma.

Dmitri Borgmann mentioned TRIENNALLY in his Language on Vacation (1965), and generalized the concept to the trinade (PACIFICATORY: paco, afar, city), the quaternade (PANTALOONERY: pan, ale, nor, try), and the quinade (PARASITOLOGICAL: pig, ati, roc, a, sol).

The alternade is much harder to find than the charade or the word deletion; the constituent parts of the latter ones leap out from the parent word. This may account for the slow production of
alternades, which require the computer to be revealed. The August and November 2000 issues of Word Ways featured a comprehensive investigation by Rex Gooch, who found 3576, 1141, 167, 14 and 1 alternades of 8 through 12 letters, and 10364, 2303, 560, 110, 16 and 2 trinades of 10 through 15 letters. (His single 12-letter alternade was, appropriately, ALTERNATIONS, splitting into “take the A TRAIN” and LENTOS.)

The only Word Ways article entirely devoted to word interlocks was “Pig Lawns and Diaper Spas” by Christopher McManus in November 1993 (these two phrases being the constituents of LApWiNgS and DlsAPpEaRs, respectively). His database was 178,000 words.

McManus introduced the concept of the number of transitions between constituents; for example, in DIsRobE there are four, between I and S, S and R, R and O, and B and E. The more transitions, the more well-concealed the constituent words are. He defined word interweaves, parent words of eight or more letters with at least six transitions. In theory, there are 8, 37, 110, 351, 737, 2004, 3682, 9605 and 15990 different word interweaves for parents of 8 through 16 letters. In practice, he found 763, 981, 662, 445, 226, 131, 53, 27 and 12 for words of 8 through 16 letters. He found 11 transitions for ARTEriOpLasTiEs, exceeding the 10 in TrleNnLaLY. The 15 parents with 9 transitions were AchEriRiAlY, COurGeOusNeSs, CoUrTiLeSt, CoUrTiNeSs, DEpaRtMenTAlY, IsChioCeLeS, PaRANuCleAaRs, PLEoNoSeSeS, PLEuROcentRaLY, PoUrPARtiEs, PStYLiAtEs, SaTuRAtOnS, SCHoLaRiNeSs, SOLiCItOusNeSs, and SpEaRhEaDs. Orlet, pourpary and pahas are in Webster's Second; aulas, departmentally and pylae in Webster’s Third.

Two words form interweaves in five ways, PLAINNESS (planes + ins, pans + lines, pins + lanes, panes + lis, panes + lins) and STEARINES (series + tan, stains + ere, sere + tains, serins + tae, sains + tere (in Webster’s Second)). However, if one is not limited to word interweaves, one can find eleven different pairs of constituents for BROILED (boil + red, role + bid, roil + bed, bile + rod, bred + oil, brie + old, bole + rid, bled + roi, bold + rie, rile + bod, bilm + roe).

If a word of j letters has n different interlocks then a word of j + 1 letters has 2n + 1 different interlocks. Thus, the number of different interlocks, each of two or more letters, for words of 4 through 10 letters are 3, 10, 25, 56, 119, 246 and 501. I published a type collection of 8-letter interlocks in the May/June 1978 issue of the British magazine Games & Puzzles. Note that 1234, 123, 678, 78 and 12 are charades, 1238, 1278, 1678, 128, 234, 345, 456, 567, 178 and 18 are word deletions, and 1357 is an alternate.
It should be possible, using the computer, to construct a type collection of nine-letter or even ten-letter word interlocks.

One can place added constraints on the interlocks. For example, is it possible to find a set of word interlocks in which a given word appears in every possible position? It can be done for AT in five-letter words: ATone, ApTly, AcuTe, AparT, rATed, pAry, pAinT, irATe, giAnT, carAT. Can the reader find a three-letter word which can similarly placed in 20 six-letter words?

One can restrict the interlock yet further by insisting that the same two words be interlocked in all possible ways to form a larger word. This is a special problem in word transpositions. If the two-letter words are denoted by AB and CD, one must find three four-letter words with the patterns ABCD or CDAB, ACBD or CDBA, and ACDB or CABD. One example is HaEt (a Scots word meaning “a whit”), HatE, and HEat; can readers find others?