

Star Anagrams

By Dan Barker

When I was a child, I used to spend many hours with my grandfather Dutch, playing math and word games. We mailed countless letters back and forth, trying to stump each other with original challenges.

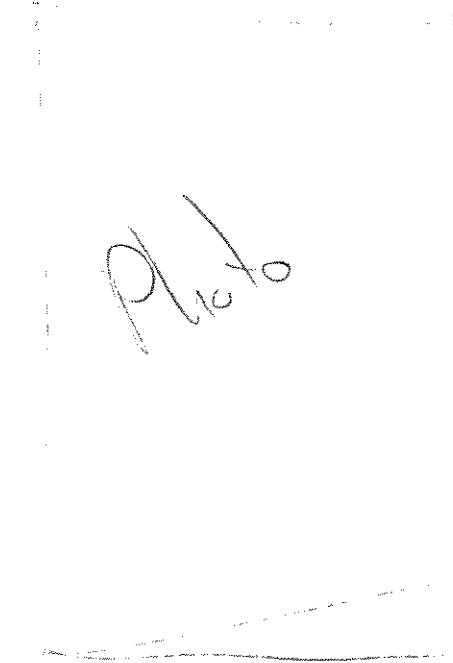
When I was about ten years old I invented the word square. I would send a word (such as SMART) to Dutch, challenging him to find a square of interlocking words like this:

S	M	A	R	T
M	I	N	E	R
A	N	G	L	E
R	E	L	A	Y
T	R	E	Y	S

The longer the word, the harder the puzzle. Dutch and I spent years playing word games like this. I later learned that I was not the first to invent word squares after all, and I think Dutch knew this. He must have been aware of the fact that squares like this have been manufactured for at least a century.

I am still playing with words, still challenging Dutch to solve this or that puzzle, even though Dutch died about 15 years ago. One of my favorite obsessions is anagrams.

I have done so many anagrams over the years that the process has become sponta-



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neous, almost automatic. It's as if there were a subroutine that is always running, searching for combinations, just below the immediate consciousness.

When I learn someone's name I sometimes pop out with an anagram on the spot, surprising myself as well as my new friend. When I am reading a book, certain words will stop me, as if Dutch were challenging me, and almost invariably an anagram comes quickly. I sometimes wonder if this subconscious subroutine (if that's what it is) already sees the answer, or strongly suspects that a certain combination of letters can be anagrammed, and then signals that there is something there.

Some anagrams are less interesting than others. Many are trivial and unimpressive. NUCLEAR becomes UNCLEAR simply by swapping two letters. MARITAL becomes MARTIAL the same way. SPEAR becomes PEARS by moving the first letter to the end (which can also be thought of as "rotating" the word). INFIDEL becomes INFIELD by moving the D to the end. There are thousands of simple anagrams like this, and they are terribly boring.

However, even with trivial anagrams, certain games can be played. Notice this example:

GARDEN →
 GANDER →
 DANGER →
 RANGED

Each step in this example was made by swapping two letters. I wonder what is the longest string of anagrams that can be produced in this manner.

In a quest to find the most interesting anagrams, I have invented a concept: "Star Anagram." As far as I know, I came up with this idea, but I wouldn't be surprised if I'm not the first. (For the time being, I will own the "patent" on this concept. Send me two cents every time you use it.)

A Star Anagram is an anagram where each letter loses its original neighbors. The words are totally rearranged.

For example: BRIEF → FIBER. No letter has the same neighbor, either before or after itself. The shuffling is complete.

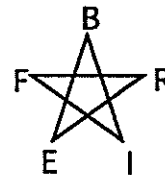
You have to hop over letters to avoid hitting the neighbors. With five-letter anagrams (five is the minimum for this to work), there is always a regular hopping, forward or backward, to obtain the next word. I started viewing the words as an infinite chain of letters. The word FIBER is produced by hopping backwards from the last letter of the word BRIEF.

B R I E F B R I E F B R I E F

With five letters, it is always the same pattern, forward or backward, hopping over one letter, like jumping checkers. Going the other way, from FIBER to BRIEF, hops in a forward direction, of course.

F I B E R F I B E R F I B E R

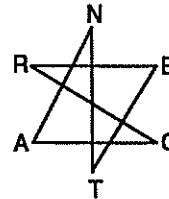
Using this system, the first and last letters of the word are neighbors. To simplify things, the word can be put into a circle, and notice what happens:



The path between words forms a star! With five letters, the shape is always a pentagram (assuming that you close the figure). Other pentagrams are:

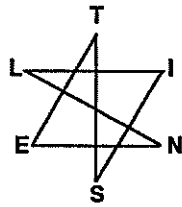
WEIRD → WIDER
 RESET → STEER
 GENRE → GREEN
 DREAM → ARMED

Six-letter anagrams form a strange star. Look at NECTAR → CANTER:



This is an unusual "star," but it is symmetric. It is the only six-point star path.

An interesting six-letter example is LISTEN → TINSEL → ENLIST:

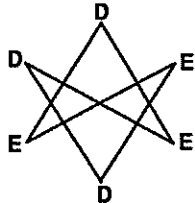


Since LISTEN and ENLIST are merely rotations, they can both be reached from TINSEL on the same path.

(As an aside, SILENT and INLETS are also anagrams of TINSEL, though not stars. If there were an anagram of these six letters beginning with N, we would have six anagrams, each beginning with a different letter. Another game: find the longest set of unique letters, each of which is the first letter of an anagram of those letters. Interestingly, the word STAR does this: STAR → TSAR (or TARS) → ARTS → RATS.)

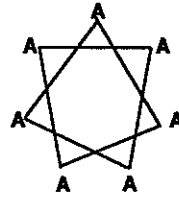
With words that have repeated letters, such as RESET and GENRE, you have to specify which letter you are using on the path. The star makes this easy.

This raises a paradox. Look at DEEDED:

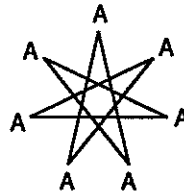


DEEDED is an anagram of itself! (Start at the lower D.) I will leave it to the reader to decide the philosophical question of whether or not DEEDED → DEEDED is truly an anagram.

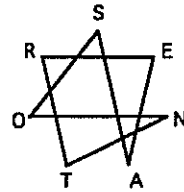
Seven-letter stars can take more than one path. I have found four symmetric seven-letter "stars," but I have yet to find anagrams that take a "perfect" path, regularly hopping over the same number of letters. A seven-letter single-hop pattern, like the pentagram, produces this star:



A double-hop produces this star:



My favorite seven-letter star is SENATOR → TREASON, but it is my favorite for meaning rather than shape. Also, it has no repeated letters and forms words that do not end with a plural S.



If you rotate this "star" one letter clockwise (putting the R on top) you can see that it is symmetric. Some other seven-letter stars are:

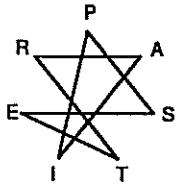
REACTED → CREATED
LETTERS → TRESTLE
BASTION → OBTAINS
SCALPER → PARCELS

REACTED → CREATED is interesting because at face value it is trivial, produced simply by moving one letter. But, if you swap the two E's as well, you have a star!

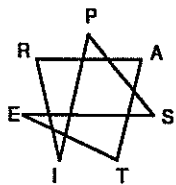
The seven letters in PARTIES actually form three sets of star anagrams:

PARTIES → PIASTER
 PASTIER → TRAIPE
 PASTIER → PIRATES

PASTIER makes TRAIPE and PIRATES, but on two different paths. Here is PASTIER → TRAIPE:



If you turn this upside-down (I on top), it looks like a little Dutch girl. Here is PASTIER → PIRATES:



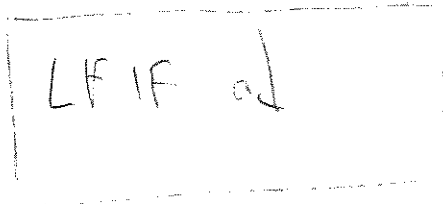
Different path. Same shape as SENATOR → TREASON. (I won a *Tough Cryptics* magazine contest last year with the clue entry "Marauders crash parties." Not a star, but interesting.)

I don't have any stars longer than seven letters.

A word of caution. If you do these in your head, you might think you have found a star that is not truly a star. Look at:

TRIANGLE → INTEGRAL

If you begin with the I of TRIANGLE



and spell INTEGRAL, it looks like you have avoided the neighbors. (Try it.) However, don't forget that the first and last letters (T and E) are neighbors! Putting the word into a circle makes it obvious.

Contest

I will mail a free book to the person who sends the largest star anagram (longest word). In case of a tie, symmetric wins over irregular, and "perfect" wins over symmetric. If there is still a tie, I will send more than one book.

Send me your entry before June 1, 1994, with your choice of one of these books:

Losing Faith In Faith: From Preacher To Atheist by Dan Barker, \$20, FFRF, Inc., 392 pages, indexed, photographs.

Maybe Yes, Maybe No: A Guide For Young Skeptics by Dan Barker, \$14, Prometheus Books. Scientific method for kids (8-13 years). Fully illustrated.

Maybe Right, Maybe Wrong: A Guide For Young Thinkers by Dan Barker, \$14, Prometheus Books. Humanistic morality for kids (8-13 years). Fully illustrated.

Just Pretend: A Freethought Book For Children by Dan Barker, \$10, FFRF, Inc. Compares God, Santa Claus (6-12 years). Illustrated.

Paradise Remembered: A Lenape Indian Childhood, and other stories by Herbert Barker, Sr. (1895-1986), edited by Dan Barker, \$10. This has nothing to do with religion or philosophy. A collection of my Grandfather's stories of life as a Lenape (Delaware) child in Indian Territory (northern Oklahoma) at the turn of the century. Brief history of the tribe's seven migrations from the Delaware River to Oklahoma. Many photographs.

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