

HIGHER-ORDER CONTRONYMS

TRISTAN MILLER

Darmstadt, Germany

<http://www.nothingisreal.com/>

“If I had a world of my own, everything would be nonsense. Nothing would be what it is because everything would be what it isn’t. And contrariwise, what it is, it wouldn’t be, and what it wouldn’t be, it would. You see?”

—*Alice in Wonderland* (1951)

A *contronym* or *autonym* is a polysemous word where one of the meanings is the antonym of another—that is, a word which is its own opposite [10]. Celebrated examples include *cleave* (which can mean either “to separate” or “to adhere”), *left* (“remaining” or “departed”), and *fast* (“immobile” or “moving rapidly”); more comprehensive lists abound in past *Word Ways* articles (e.g., [7, 8]) and on the Internet. In 1967, Dmitri Borgmann proposed turning arbitrary words into their opposites via chains of synonyms [1], a game which he and many others since have indulged in [2, 3, 9]. Though Borgmann referred to such constructions as *synonym chains*, I think it more fitting to call them *higher-order contronyms*, since they are really just a generalization of this much older phenomenon, and since there is nothing about the term “synonym chain” which implies that the ends must be opposites.

We can formalize the idea of contronymy by saying that a word w_1 is a contronym of order n if there exists some shortest sequence of distinct words $w_1 \leftrightarrow w_2 \leftrightarrow \dots \leftrightarrow w_n$ such that w_1 is an antonym of w_n , and every pair of adjacent words w_i, w_{i+1} are synonyms. In a 1988 article, A. Ross Eckler claimed that such sequences are not necessarily bidirectional, since a dictionary or thesaurus’s entry for w_i may list w_{i+1} as its synonym, but not vice versa [3]. However, I would argue that such omissions cannot be taken as evidence of nonexistence of the reverse relation; rather, they are almost certainly the result of editorial discretion and space concerns. The symmetric character of synonymy and antonymy is not only common sense, but also commonly accepted by academic linguists [4]. It follows, then, that w_n must also be a contronym of order n .

With this definition in mind, the aforementioned *cleave*, *left*, and *fast*, are all trivially contronyms of order 1. For an example of a higher-order contronym, consider the sequence *depart* \leftrightarrow *quit* \leftrightarrow *stop* \leftrightarrow *stay*. Observe that *depart* and *quit* are synonyms (in the sense of leaving somewhere), as are *quit* and *stop* (in the sense of ceasing an activity), as are *stop* and *stay* (in the sense of immobilizing something). But *depart* and *stay* are antonyms (in the senses of leaving or remaining somewhere), so they are both contronyms of order 4.

To find higher-order contronyms all that is required is a dictionary or thesaurus which lists synonyms and antonyms, plus the patience to follow the synonymic paths. The process can be made a bit less onerous through the use of a machine-readable lexicon and a little programming to automate the search. This is, in fact, exactly what Eckler proposed over a quarter of a century ago: he envisaged a “network of synonyms, with thousands of entries” from which contronyms could be mined computationally [3]. In 1988, however, electronic dictionaries were rare and expensive, and it would have been difficult to extract their synonymic and antonymic relations into an easily searchable semantic network. Nowadays comprehensive semantic networks for several languages

are freely available online. The most popular of these is WordNet [5], an electronic database which provides definitions, synonyms, antonyms, and other information for 147 306 English words. To realize Eckler’s vision, I performed a contronym search on WordNet, and the results show higher-order contronyms to be surprisingly common: I discovered 18 contronyms of order 2, 36 of order 3, 93 of order 4, 192 of order 5, 193 of order 6, and 208 of order 7. So 0.5% of all words in WordNet are contronyms of order 7 or less.

There are a couple of things to note about my results. First, my chains seem short in comparison with some previously reported results—Eckler, for example, gives a chain of 21 synonyms [3]. However, this is due to the less rigorous rules which had heretofore been used for calculating chain lengths. Even when duplicate words are prohibited, it is easy to construct extremely long chains simply by including every possible yet-unused synonym for a given concept. Recall that my definition of a contronym requires the synonyms to constitute the *shortest* such chain. This rule is analogous to the “minimum steps” rule used for calculating word ladders [6]; under it, any redundant sequences from the chain must be pruned *before* calculating its order. Consequently, every pair of adjacent words in the chain must refer to a concept which is distinct from all the other concepts referred to in the chain.

Second, many of the contronyms discovered by my search rest on synonym chains with very obscure or specialized word senses. For example, it reports *birth* as an order-5 contronym based on the sequence *birth* ↔ *bear* ↔ *endure* ↔ *last* ↔ *death*. I expect that any casual reader would agree with all the synonym relations in this chain except for the final one. According to WordNet, *last* and *death* are synonyms in expressions such as “a struggle to the last”; though technically correct this usage is so particular that it’s not something I’ve seen recorded in any other dictionary or thesaurus.

Below is a selection of interesting higher-order contronyms, including the synonym chains, where I think most people could easily verify the synonymy between adjacent words without recourse to a dictionary or thesaurus. A complete list of the contronyms found by my search will be made available on my web page.

Contronyms of order 2

- colour ↔ discolour

- source ↔ root ↔ settle ↔ sink
- start ↔ depart ↔ quit ↔ stop
- supply ↔ issue ↔ take ↔ demand

Contronyms of order 3

- continue ↔ stay ↔ stop
- fail ↔ die ↔ pass
- give ↔ yield ↔ take

Contronyms of order 5

- accept ↔ bear ↔ stand ↔ resist ↔ refuse
- agree ↔ hold ↔ withstand ↔ resist ↔ dissent
- associate ↔ assort ↔ separate ↔ disunite ↔ dissociate
- blur ↔ smudge ↔ spot ↔ point ↔ sharpen
- bore ↔ gauge ↔ gage ↔ stake ↔

Contronyms of order 4

- head ↔ lead ↔ trail ↔ tail
- shrink ↔ reduce ↔ dilute ↔ stretch
- soften ↔ moderate ↔ temper ↔ harden

- interest
- bottom ↔ rear ↔ back ↔ cover ↔ top
- dark ↔ obscure ↔ vague ↔ faint ↔ light
- enlist ↔ engage ↔ operate ↔ run ↔ discharge
- extinguish ↔ eliminate ↔ pass ↔ clear ↔ light
- heavy ↔ dense ↔ dim ↔ faint ↔ light
- independent ↔ main ↔ master ↔ subdue ↔ subordinate
- joint ↔ articulate ↔ say ↔ tell ↔ separate
- primary ↔ basal ↔ base ↔ lowly ↔ secondary
- progress ↔ go on ↔ pass ↔ lapse ↔ regress
- sharp ↔ keen ↔ neat ↔ straight ↔ flat
- shut ↔ exclude ↔ turn out ↔ spread out ↔ open
- sit ↔ seat ↔ fundament ↔ base ↔ stand
- succumb ↔ yield ↔ bear ↔ endure ↔ survive
- surrender ↔ fall ↔ decline ↔ refuse ↔ resist
- thick ↔ compact ↔ contract ↔ reduce ↔ thin
- unite ↔ join ↔ fall in ↔ break ↔ separate
- wicked ↔ severe ↔ stark ↔ pure ↔ virtuous

Contronyms of order 6

- acute ↔ keen ↔ great ↔ heavy ↔ dense ↔ obtuse
- closing ↔ end ↔ stop ↔ break ↔ gap ↔ opening
- decrease ↔ fall ↔ descend ↔ derive ↔ gain ↔ increase
- deteriorate ↔ devolve ↔ return ↔ recall ↔ retrieve ↔ recover
- differentiate ↔ mark ↔ check ↔ contain ↔ incorporate ↔ integrate

- dishonour ↔ violate ↔ plunder ↔ prize ↔ award ↔ honour
- ending ↔ termination ↔ result ↔ solution ↔ root ↔ beginning
- entangle ↔ tangle ↔ ravel ↔ unravel ↔ untangle ↔ disentangle
- forbid ↔ prevent ↔ keep ↔ support ↔ tolerate ↔ allow
- foot ↔ base ↔ basal ↔ primary ↔ principal ↔ head
- forward ↔ fore ↔ bow ↔ bend ↔ turn ↔ reverse
- full ↔ broad ↔ liberal ↔ free ↔ discharge ↔ empty
- hard ↔ heavy ↔ dense ↔ dim ↔ subdued ↔ soft
- ignite ↔ light ↔ clear ↔ pass ↔ eliminate ↔ extinguish
- stable ↔ static ↔ still ↔ smooth ↔ fluid ↔ unstable
- tight ↔ close ↔ snug ↔ cozy ↔ informal ↔ loose
- vomit ↔ retch ↔ gag ↔ strangle ↔ repress ↔ keep down
- weak ↔ feeble ↔ lame ↔ square ↔ solid ↔ strong

Contronyms of order 7

- agreement ↔ correspondence ↔ balance ↔ remainder ↔ difference ↔ divergence ↔ disagreement
- balance ↔ counterbalance ↔ counteract ↔ subvert ↔ overthrow ↔ derangement ↔ unbalance
- busy ↔ occupy ↔ reside ↔ rest ↔ perch ↔ light ↔ idle
- cold ↔ frigid ↔ frosty ↔ snappy ↔ lively ↔ live ↔ hot
- conservative ↔ cautious ↔ timid ↔ faint ↔ light ↔ loose ↔ liberal
- distrust ↔ suspect ↔ surmise ↔ guess ↔ think ↔ believe ↔ trust
- false ↔ fake ↔ cook ↔ fix ↔ secure ↔

- dependable ↔ true
- foreground ↔ spotlight ↔ spot ↔ place
↔ range ↔ scope ↔ background
- green ↔ immature ↔ young ↔ new ↔
modern ↔ advanced ↔ ripe
- immature ↔ young ↔ new ↔ modern ↔
advanced ↔ ripe ↔ mature
- inclination ↔ tilt ↔ sway ↔ swing ↔
vacillation ↔ hesitation ↔ disinclination
- inconvenience ↔ put out ↔ douse ↔
duck ↔ dodge ↔ contrivance ↔
convenience
- insane ↔ mad ↔ sore ↔ sensitive ↔
- sensible ↔ reasonable ↔ sane
- multiply ↔ breed ↔ strain ↔ sieve ↔
sort ↔ separate ↔ divide
- pain ↔ hurt ↔ offend ↔ violate ↔
ravish ↔ delight ↔ pleasure
- short ↔ little ↔ slight ↔ flimsy ↔
unconvincing ↔ improbable ↔ tall
- unfurl ↔ unroll ↔ unwind ↔
disentangle ↔ straighten out ↔ clear up
↔ wrap up
- victory ↔ triumph ↔ prevail ↔
dominate ↔ master ↔ overcome ↔
defeat

References

- [1] Dmitri Borgmann. *Beyond Language: Adventures in Word and Thought*. Charles Scribner's Sons, 1967.
- [2] A. K. Dewdney. Computer Recreations: Word ladders and a tower of Babel lead to computational heights defying assault. *Scientific American*, 257(2):108–111, August 1987.
- [3] A. Ross Eckler. Websterian synonym chains. *Word Ways*, 21(2):100–101, May 1988.
- [4] Harold P. Edmundson. Axiomatic characterization of synonymy and antonymy. In *Proceedings of the 2nd International Conference on Computational Linguistics*, 1967.
- [5] Christiane Fellbaum, ed. *WordNet: An Electronic Lexical Database*. MIT Press, 1998.
- [6] Rex Gooch. Snakes and ladders. *Word Ways*, 31(2):89–109, May 1998.
- [7] Richard Lederer. Curious contronyms. *Word Ways*, 11(1):27–28, February 1978.
- [8] Richard Lederer. More curious contronyms. *Word Ways*, 12(3):167, August 1979.
- [9] Dave Morice. Kickshaws. *Word Ways*, 38(3):218–229, August 2005.
- [10] Joseph T. Shipley. *Playing with Words*. Prentice-Hall, 1960.