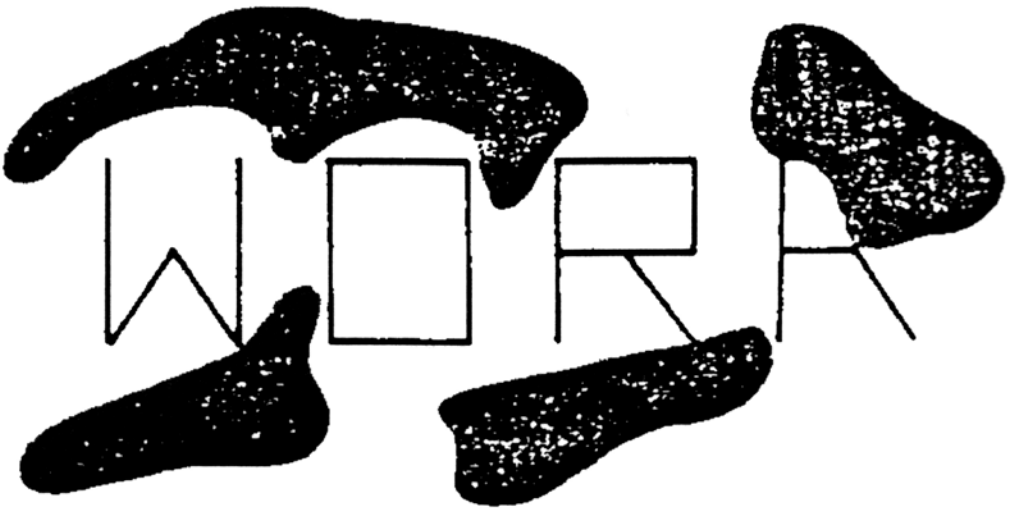
WORP

Cover image: Graphic used to test "the ambiguous K/R character"
in a word perception experiment. With thanks to Shannon Ebner

Eely but pragmatist, language accomplishes its ends but resists revealing its inner life. The purpose of language is communication, and so when its business is done, most messages evanesce without a second thought, their interlocutors heedless of the theoretical matrices they're supporting or opposing. Language is a tool, a medium, a vehicle. The successful use of language results in the successful transmission of a message.

No—that's too pragmatic a picture. It's eelier than that. Even the anodyne paragraph you just finished reading makes arguments that are easy to poke holes in. What about the purpose of language in Scrabble? It's not communication; it's play. What about tongue twisters? Phonetic gymnastics. Despite its utility, language defies categorical statements, and this slipperiness makes it beautiful, like an old friend you never tire of talking to.

The difficulty of asserting something meaningful about language doesn't stop people from trying. Theorems have to hold for specific cases, however, and almost every example about language can be unraveled to some extent.

For example …

Colorless green ideas sleep furiously.

Linguist and cognitive scientist Noam Chomsky coined this phrase as an example of a syntactically valid sentence that means nothing. Although this sentence was just a prop in a larger argument about the nature of language, it also sounds like a challenge, so of course, linguist-jokesters created contexts in which if you squint at it just the right way, it's sensible. A 1985 contest at Stanford produced an entry that set up the concept that flower bulbs are themselves mostly colorless, but hold an idea of the full burst of green leaves and bright blossoms to come: "While winter reigns, the earth reposes, but these colorless green ideas sleep furiously."

From our contemporary perspective, we're not even stuck with the seeming tension between "colorless" and "green." "Green" now frequently means "ecologically friendly," although it didn't when Chomsky

coined his phrase in 1957. (The first citation that definitively uses "green" in this sense dates to 1973.) A colorless green idea—even a good one—probably wouldn't catch on, although it might gain force in its dormancy. It might even sleep furiously.

Even Einstein could have solved that equation.

Semantics has its own rules. Chomsky's colorless green ideas were intended to skirt semantics altogether, but the oddness of this sentence is detectable only with the following knowledge:

(1) Solving equations requires intelligence.

(2) Einstein was very intelligent.

(3) The "even [X] could" construction suggests X lacks something necessary to the action in the predicate.

Therefore the sentence is unidiomatic, demonstrating that sense arises from consideration of meanings as well as syntax (not that anyone who ever heard a five-year-old tell a story ever doubted this).

Context, however, is everything. Consider the following utterly false story:

Einstein's absent-mindedness got him into trouble. His checkbook often wound up under piles of books and papers, inaccessible when he needed to pay his bills. His secretary suggested he try to outsmart his future self and write "checkbook = top drawer" on the checkbook's inside front cover, so that he would always see the message just before closing it. Even Einstein could have solved that equation.

Fighting elephants can be dangerous.

A prototype for ambiguity—it could mean either "If you were to fight with an elephant, it could be dangerous" or "Elephants that are fighting can be

dangerous." If someone said this to you, though, you'd ask for clarification. Or maybe you'd skip the finer point and just stay away from a fighting elephant, whether its opponent were a human or another elephant.

That that is is that that is not is not is that it it is

Usually presented as a punctuation puzzle, this example purports to show us how a few scrupulously placed marks can make sense of what looks like a string of filler words, condiments with no protein. The so-called solution is *That that is, is. That that is not, is not. Is that it? It is.*

What makes this puzzle different is its claim that the unpunctuated original is near-indecipherable. Other demonstrations of the importance of punctuation of the "Let's eat, Grandma" variety veer from one meaning to another, but "That that is" shows us how commas and periods bestow understanding on us. Granted, the solution is much easier to understand.

But that doesn't mean an editor would like it. Start with "That that." Virtually every editor would change this, some to "that which" and some to "what." Now consider that comma between is number 1 and is number 2, separating the subject of the (amended) sentence, "that which is," from the verb, "is." Compare it with this comma: *What goes up, must come down.* No editor would let that one slide. Our puzzle-maker apparently wanted to divide two instances of the same word, to try to alleviate the confusion or distraction that arises with repetition, even though no one has trouble with "I told you you could do it" or "Give him the chance to come in in the morning." Or maybe our riddler just wanted to mark a spoken pause, an odd tactic in what's supposed to be an exercise in the importance of good punctuation. Best without heavier rewriting: *That which is is.* A good editor would suggest editing out the word repetition, giving us *That which exists is. That which does not exist is not. Is that it? It is.*

A more zealous editor would probably also want to get rid of the stylistically distasteful last five words, which seem to serve no rhetorical purpose. Editor's query to the writer: "Are you uncertain of your own conclusion? Are you trying to emphasize the argument? Either way, you've just

finished stating a tautology, so you probably don't need it." In any case, the puzzle is hard at least partially because the solution isn't well written. It preys on the difficulty of discerning a message where there isn't much to say and on the mind's antipathy for repetition. Clearer communication carries more unambiguous markers of parts of speech, tense, and syntax that would render the puzzle less puzzling. Or, if spoken, it carries cadence and pauses—approximated in the solution by the punctuation—that supply the missing information. The solution's sloppy punctuation and writing doesn't show that punctuation grants us understanding. It only shows that you can concoct a sentence such that revealing the pauses takes readers across a blurry line between befuddlement and underwhelmedness.

James, while John had had "had," had had "had had." "Had had" had had a better effect on the teacher.

This punctuation challenge of the same ilk, which I've given in solution form, illustrates many of the same issues. As communication, it's dubious. As a puzzle, the challenge arises partially from the tortuous solution. Imagine an editor asked the puzzlemaker questions, which she answered bluntly.

Q: Why is this whole sentence written in the past perfect?
A: To create a longer string of hads.

Q: Why is James so far away from the verb that he is the agent of?
A: To create a longer string of hads.

Q: Why use "had" for the main verb when you could be more specific, with "written" or "chosen"?
A: To create a longer string of hads.

Q: Why not add a sentence before or after to clarify what the context is?
A: That's irrelevant to creating a long string of hads.

Wouldn't the sentence "I want to put a hyphen between the words Fish and And and And and Chips in my Fish-And-Chips sign" have been clearer if quotation marks had been placed before Fish, and between Fish and and, and and and And, and And and and, and and and And, and And and and, and and and Chips, as well as after Chips?

Martin Gardner, the longtime *Scientific American* columnist and polymath, loved word-repetition puzzles. He also wrote "That that that that that signifies is not the that to which I refer." Using the convention of italics to refer to terms: "That *that* that that *that* signifies is not the *that* to which I refer." In his spirit, I propose that his sentence might be less bewildering with that italics convention:

Wouldn't the sentence *"Wouldn't the sentence* 'I want to put a hyphen between the words *Fish* and *And* and *And* and *Chips* in my Fish-And-Chips sign' *have been clearer if quotation marks had been placed before* Fish*, and between* Fish *and* and*, and* and *and* And*, and* And *and* and*, and* and *and* And*, and* And *and* and*, and* and *and* Chips*, as well as after* Chips?" have been clearer if italics and roman type had alternated for *Fish*, and *and*, and *and*, and *and*, and *and*, and *and*, and *And*, …

etc.

Buffalo buffalo Buffalo buffalo buffalo buffalo Buffalo buffalo.

Speaking of word repetition and the linguistic mind's antipathy to it, this (correctly punctuated) sentence pushes that button like a jonesing lab rat. The usual presentation of this perseverated contrivance is an aw-jeez *Ripley's Believe It or Not* attitude of "Look at this crazy thing! It's a real sentence!" It's quite obviously not a "real" sentence in the sense that any person has ever said it in order to transmit the message of what it means, but by the accepted rules of English, it's grammatical.

Here's why it's grammatical. First, the word "buffalo" isn't just the animal and the city in New York (all the capitalized instances above are the city—I've spared you the confusion-maximizing small-caps version of the sentence). It's also a semi-obscure verb meaning "bewilder."

Second, English usage allows dropping the word "that" in relative clauses. "Allows" isn't equivalent to "recommends," of course—the *AP Style Guide*'s entry on "that" concludes, "When in doubt, include *that*. Omission can hurt. Inclusion never does." So here's a rewrite of the sentence, substituting "bison" for the animal, "Rochester" for the city, and "bewilder" for the verb, reinstating the missing "that" with brackets, and adding another bracketed phrase to clarify the gloss: *Rochester bison [that] Rochester bison bewilder [also in turn] bewilder Rochester bison*.

Here's why those buffaloes are so bewildering. First, antipathy to repetition is triggered by the second word and the sore spot punched continuously. The reason this antipathy exists comes from the spell of reading being broken by the surface texture—you're jolted out of the state where you are looking past the words to the meaning, not unlike the sudden consciousness that you're watching a movie when something ridiculous happens in a bad film. That focus on the texture initiates the phenomenon of semantic satiation, where words seem to lose their meaning when they're repeated too often. The sudden, unwilling scrutiny of trees instead of forest is what style guides are trying to avoid when they suggest that good editing removes repetitions. Second, there's no redundancy in the sentence, the way there is in normal communication. A maze with several paths out is much easier than one with a single solution. Third, the message doesn't correspond with something that would be said in the real world. It's always easier to parse a sensible, real-world message than something eccentric that happens to line up words in syntactically appropriate places.

Cwm-fjord-bank glyphs vext quiz.

The world of the pangram—a work containing every letter of the alphabet—functions according to the same axioms as the repeated-word creations: syntax is paramount, but sense is not essential. Some background is in order to explain the sense here. A *cwm* is a glacial basin formed in a mountain and is also called a *cirque*. The word is borrowed from Welsh, where w can serve as a vowel pronounced like oo in boot. *Bank* here is the riverbank sort. *Vext* is an alternate spelling of *vexed* used by such

eminences as Shakespeare, Milton, and (Percy) Shelley. The quiz that makes the most sense in this sentence (not a distinction to put on its résumé) is "an odd or eccentric person," which is the sense in the oldest citation of the word in the *Oxford English Dictionary*. Putting it all together, the sentence means "Glyphs written on the bank of a basin in a fjord irritated an odd person." Yes, it should probably read "… vext a quiz," but you can't have everything in life or in pangrams.

(Incidentally, this pangram often shows up punctuated "Cwm, fjord-bank glyphs vext quiz," a choice that would appear as bizarre as it truly is if you substituted "basin" for "cwm." Some readers would probably conclude that the writer is talking to the basin. Also, I haven't altered the word order in the heading, but the cwm is in the fjord rather than the other way around, so probably "Fjord-cwm-bank glyphs" is the right sequence, just as "inlet-basin-wall glyphs" better expresses the location of the glyphs than "basin-inlet-wall glyphs." The fact that rather little thought has been given to the punctuation indicates that the people running together long strings of hads are not the same people devising pangrams.)

Although only the thinnest thread of intelligibility holds this sentence together, pangrams in which strictures are loosened and repeated letters allowed become more idiomatic and require less explanation the longer they get:

28: Waltz, nymph, for quick jigs vex Bud.

32: Pack my box with five dozen liquor jugs.

35: The quick brown fox jumps over the lazy dog.

On the other hand, most 26-letter pangrams are equally insensible. Take "Junky qoph-flags vext crwd limb." A *qoph* is an Arabic letter, a *crwd* is a Welsh musical instrument, a *zimb* is a horsefly. Or they introduce proper names, as in the case of "Blowzy night-frumps vex'd Jack Q." (There tends to be a lot of vexing in pangrams.) Pangrams, like palindromes, are an art form in which the restrictions drive the content. Robert Frost said writing free-verse poetry is like playing tennis without a net. Writing pangrams is like playing tennis with a chainsaw.

Robert set the pencil down. / Robert set down the pencil.

Editors say there are lots of ways to get your point across. Linguists struggle to find expressions they consider equivalent. *Robert set the pencil down* and *Robert set down the pencil* is as close to equality as they come, each a better mate than *The pencil was set down by Robert* or *The pencil is what Robert set down* or *Robert is the one who set the pencil down*. However, if the next clause is "picked it up and twirled it around," only one of those two supposedly matched sentences would make a listener think of a square-dance caller.

The horse raced past the barn fell.

A garden-path sentence is one that encourages a misinterpretation. The paradigmatic garden-path sentence in linguistics introduces us to a horse that falls. Which horse? The one that somebody raced past the barn at some point in the past. The horse raced past the barn fell.

This sentence is supposed to exemplify how language processing takes place one word at a time, such that the reader is led down the garden path by "The horse raced past the barn," then hits a dead end when "fell" falls. It's a somewhat dubious proposition, as a counterexample sentence shows: "Polish sausages with a waxy cloth to make them more appealing to customers." In this case, the reader doesn't so much smash into a wall at the dead end as slowly grow aware of being lost. The wordlike chunk "Polish sausages" has to be split up in the brain before the intended meaning shows through, rather than reinterpreting word by word. Plus it's kind of a crazy idea. But horses aren't really known for falling, either. They sleep standing up, after all.

Language-processing debates aside, the garden path here is a hedge maze—what fascinates us (at least us nonlinguists) is the enigma posed by the sentence, not what it tells us about the brain. If the example were funny, it would be clear that we were interested in the aha moment when the puzzle of interpretation is resolved. Consider the headline BRITISH LEFT WAFFLES ON FALKLANDS, supposedly from an April 1982 edition of *The Guardian* (though I couldn't locate it in the paper's

online historical archive). Or the equally apocryphal wartime headline FRENCH PUSH BOTTLES UP GERMAN REAR. Would anyone have collected (or invented) these if they weren't funny?

Not to mention that our by-now-familiar friend, poor editing, plays a role here as well. "Race" as a transitive verb is much less common than "ride," the context that would allow the reader to recognize this previously discussed horse is missing, and, of course, adding "that was" makes it much clearer.

John and a hammer broke the window.

In this sentence, "John" is the agent of the verb "broke," and "hammer" is the instrument of the verb. Because they don't match in case, native English speakers find this sentence ungrammatical. But probably not unidiomatic or uncommunicative:

Q: Did James break the window with his fist?
A: John and a hammer broke the window.

In that context, some readers might even prefer this construction, employing the rhetorical device of syllepsis, where a single word performs two functions, as in Ambrose Bierce's definition of *piano* in *The Devil's Dictionary*: "A parlor utensil for subduing the impenitent visitor. It is operated by depressing the keys of the machine and the spirits of the audience." Or Mike Myers' character in *So I Married an Axe Murderer* says of an ex, "She stole my heart and my cat." (Some people call this technique zeugma. Some say syllepsis is a type of zeugma. Meh, semantics.) One person's ungrammatical is another person's clever.

A knife is when you cut with it.

Children gradually learn to define words like adults. In *How Language Works*, David Crystal gives examples of the stages. First, in response to a question such as "What's a shoe?," a child of around three will answer "That," while pointing, or "And a sock," or "Mummy got a shoe."

Next, kids will describe their own experiences, as in "What's a bicycle? / I ride on and fall off," or "What's an umbrella? / It's black." They cross a threshold when they can isolate the essential quality that provides a thing with its quiddity. What's a knife? "A knife is sharp." "A knife is when you cut with it."

This answer may look ungrammatical, but it's actually quite observant. Our Platonic ideal of a knife might be "an instrument used for cutting," but if we looked at a sharpened stone from Fred Flintstone days, would we call it a knife? The child's statement provides a possible answer, the pragmatic one: "A knife is when you cut with it." In that sense, the child's answer actually is more open-ended than the dictionary definition, a glimpse of how we might see the world without the heavy yoke of taxonomy on our shoulders all the time.

Not to mention that if we were put on the spot to verbalize a difficult definition, our answers would probably be equally oblique (and probably ungrammatical). What's populism? What's Heisenberg's Uncertainty Principle? What's developmental linguistics?

. . .

Almost any example can be unraveled, its principle undermined. I once took a class on Schenckerian analysis, the music-theory branch that posits in part that the deep structure behind every piece of music is a scale descending across a third, a fifth, or an octave. Schencker allowed that an initial ascent, which, speaking German, he called the *Anstieg*, could precede the falling scale. In the class, a student wrote a short piece of music that never descended, only ascended, and titled it "Anstieg." The professor said that Schencker would have called his piece degenerate. Name-calling is the last redoubt of the threatened theorist.

Poking these examples with a sharp stick doesn't serve just to twit the diviners of principles. Their pokability shows the ragged edges of any instantiation of language, with histories, contexts, connotations, old resonances, assonances, rhymes, lyrics, puns, and personal hobby horses ineluctably brought to bear. Like a water balloon thrown from a building, no matter how gently you toss it and how precisely you aim it, spatter

leaps away in ways you can't control.

A slippery concept informs our sense of the relative success of these examples. You might think of it as "naturalness," or the notion that we might actually hear or read such sentences in certain nonexemplary contexts. But make no mistake: they are pure meta, owing their existence only to their internal properties and not one whit to their content. "Colorless green ideas sleep furiously" epitomizes this—Chomsky deliberately concocted it as an example of a sentence that doesn't mean anything.

But that glimmer of naturalness resonates. You know—you just KNOW—why "Pack my box with five dozen liquor jugs" is better than "Cwm-fjord-bank glyphs vext quiz." There's a continuum of naturalness in the domain of syntactically valid sentences, with gibberish like that buffalo business on one end and whatever you last said on the other, the lack of attention to naturalness being a virtual guarantee of naturalness.

And beauty. A group of speakers of different native languages, when thrust together and needing to communicate, form a makeshift language linguists call a pidgin from fragments of the various tongues they speak. A pidgin is clunky, limited, and works like a baffled tourist with a phrase-book. The children of pidgin speakers somehow agree on rules and systems for the pidgin and turn it into a creole, a language with all the spinning, buzzing life and boundlessness of any other native language. The bursting-at-the-seams humanness of the language sprouts from the language community; the fire comes only from rubbing speaking and listening together. The transmission may be staticky, the principles may be fuzzy, but the magic is that meaning jumps from my mind to yours:

(1) The psychologists Jean Berko and Roger Brown in 1960 told a story of a child with a toy fish. The child says, "This is my fis." The parent says, "Is this your fis?" The child replies, "No! It's my fis!"

(2) My daughter wanted to give our cat a treat. The cat has three bowls on her food mat: one for dry food, one for wet food, and one for water. As she held the treat and considered the bowls, I said, "Put it in her wet bowl." She dropped the treat in the water.

(3) A child asks, "Mom, can I have a cookie?" Mom answers, "You've just had one."

*