Understanding, Curing, and Preventing the Noun String: Part 1

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THE MEANING OF THE TERM *NOUN STRING* is self-evident: Nouns are overemployed as adjectives and stacked one atop another with abandon. Ligatures—connectives like prepositions, conjunctions, and articles—are handed their hats during composition. Weak nouns, masquerading as adjectives, are used in place of dynamic verbs. What does a sentence meaning strangulation noun string look like? There it is, the sentence to the left. It is a string of nouns that strangles the meaning of a sentence. Like I tell the engineers with whom I work: If you find yourself stringing three or more nouns together without connective tissue, you are probably committing a noun string. In this article, I call the people who habitually do this *stringers*.

In the course of a writing project, an engineer may generate thousands of ideas about his subject, but the ideas that merit communication must eventually be reduced to sentences. Ideas may sprawl in the mind—nouns swirling like pixie dust—but they must be relentlessly constrained to sentences that meet the readers' expectations. Readers crave action and recognizable linguistic patterns, such as subject-verb-object and preposition-object, but noun strings deny this craving. This article explores the noun string, its disastrous effects on cognition, its causes, and its cures.

How does a noun string cause misreading?

Errors in documents range from the trivial—misspellings, superfluous commas, faulty pronoun agreement—to those that impair cognition. Noun strings are located at the latter end of the spectrum, and although they are not technically violations of grammar, they may pack more destructive punch than most solecisms.

All of the effects of noun strings discussed below can generally be categorized as "confounds and annoys the reader." The reader who encounters a noun string does not arrive at full comprehension in a timely manner, begetting annoyance. Ensuring full comprehension should be a primary concern of the conscientious writer.

Virtuosity in crafting sentences is not the prime goal of technical communication. The goal of scientists and engineers is more modest: clarity. Clarity is essential, but ubiquitous noun strings obscure meanings and annoy our readers, defeating the primary rhetorical purpose of technical communication.

Below are some causes of misreading engendered by noun strings.

Conceals Relationships Between Words

Understanding how nouns relate to other nouns in a sentence is essential to successful interpretation, and yet relationships are the very things that noun strings conceal. The function of each word in a sentence should be manifest, as should be its relationship to other words in the sentence. But in a noun string, a noun floats, detached from the words around it, devoid of the linguistic structures that connect it in meaningful ways, devoid of patterns that the reader craves. For example, take the pattern "subject-verb-object," which is the staple of many sentences. Now, consider the following subject-verb-object sentence:

The investigator described **the employed energy shortfall makeup technology**.

The object of the verb "described" is lost in a "where's Waldo" nounscape, bereft of the kind of connective tissue that makes relationships explicit. I repaired this particularly ineffective sentence in this way:

The investigator described **the technology that the custom power device employs to make up for energy shortfalls**.

I was able to recover two verbs and several connectives. I also installed the essential but omitted answer to the question, "What is making up for the energy shortfall?" "A custom power device," I would discover from the author. Although the author's message is now unequivocal, the word count swelled from 9 to 17 (as you will see later, I am not a big fan of concision for concision's sake). The revision violates the compulsive linguistic thrift that preoccupies scientists and engineers, as well as the misguided notion that fewer words mean "easier to read." Easier to write, perhaps, but certainly not "easier to read."

Violates Reader Predictions

Readers make predictions—about words that they have not encountered yet, about the function of words (such as subject, verb, preposition), and about the meanings of words. Often, noun strings include words that intervene between a subject and its verb, a verb and its object, or a preposition and its object, thwarting the reader's predictions. A typical pattern for an interfering noun string is:

[subject][transitive verb] [interference] [object]

For example, consider the following commingling of nouns that follow a transitive verb:

The project team developed **a surge environment classification scheme**.

The reader wants to know: What did the team develop? But he gets a handful of candidates: *surge? environment? classification? scheme?* Of course, through analysis, one can determine that the answer is "scheme." And what kind of scheme? One that classifies surge environments. However, analyzing is not reading. Reading is swift and automatic. Here, the reader expects [subject][verb][object] but gets [subject][verb][noun that is not an object][noun that is not an object][noun that is not an object][noun that *is* the object]. This intervention—with its resulting suspension of the object—violates the [subject][verb][object] pattern that the reader craves, violates the reader's expectations, and engenders uncertainty.

The same hampering of the reader's predictive success occurs in the following sentence:

Wiring issues can easily affect **mitigation equipment performance.**

Here, the subject is "issues," the verb is "can easily affect," and the object of the verb is "performance." However, the reader may initially interpret "mitigation," "equipment," or "mitigation equipment" as the object. (And why not? It makes sense.) Once the reader misidentifies the object, the reader does not know how to process "performance." The reader has to determine the relationship between these three words outside the reading process, and once he's started trying to figure things out, he has stopped reading.

Strands the Reader

Have you ever been up the garden path? *Dictionary.com* defines a garden path as "noting or pertaining to a sentence that is easily parsed incorrectly because its beginning suggests it has an interpretation that it clearly does not have." Garden paths can be caused by squeezing out ligatures and nominalizing action words during the construction of noun strings. They leave the reader stranded, engendering a bitterness toward the author for wasting his time or, worse, making him feel inadequate.

Prevents Phrase Collapsing

The concept of a limited working memory has become an imperative for professional communicators to prevent the cognitive overload of the reader. If a phrase is too long, the reader will fail to process it properly in short-term memory. The elements of the phrase will not collapse—or coalesce—into meaning. When a noun string fills the reader's head, he cannot render the gestalt of the sentence. The reader will collapse before the phrase does.

Conceals the True Number of a Noun

When people use a noun as an adjective, they typically use the singular form, even though the notion of the noun as it is used in the sentence may be plural. I call this "false singularizing." For example, "electronic system malfunctions" conceals the true number of "system." In this case, malfunctions can happen to all kinds of electronic systems, so unstringing this noun string would liberate the "s": malfunctions of electronic systems.

Complicates Interpretation

Parsimonious writers often overuse implication, assuming that omitted words can be conjured by the reader to consummate the interpretation of a sentence. However, in technical communication, explicit is the way to go. Leave almost nothing to chance (there are some perfectly legitimate elliptical constructions, which omit words that the reader can effortlessly pick up from the context). Noun strings omit the ligatures that often serve as lynchpins of interpretation, little words such as "of," "in," and "for." Connectives, mostly prepositions, are very important for fluid reading, explicitly informing the reader about how words are related to each other. Without them, readers must infer those relationships, and inference may be difficult or result in faulty sense-making. Exposing a sentence to different interpretations is counterproductive in expository writing, although constructive ambiguities may enrich fiction and other art genres.

What Causes Noun Strings?

Now that we understand how noun strings can cause uncertainty, I turn to a conspicuous question: What causes noun strings in the first place? What follows is conjecture, but it is based on two decades of observation, both in the classroom—where I taught writing to would-be engineers, among other majors—and in the world of graduated engineers. One observation trumps all others: When an engineer puts pen to paper, he does not *intend* to fabricate

a linguistic structure that frustrates the reader, or that jams the reading machinery. But jamming does regularly occur. Here are a few possible causes of noun strings.

The Noun String Is a Meme

The noun string is a meme lurking in the halls of academia and spreading to the prose of the pragmatic world. According to Merriam-Webster online, a meme is "an idea, behavior, style, or usage that spreads from person to person within a culture." Lethal to the reading process, indiscriminately killing sentences, and crushing interpretation, this meme is an epidemic in the engineering community, incubating in the schools of science.

The meme concept moves me beyond blame and into a more productive way of thinking about noun strings. The noun string in the halls of engineering schools is a meme in the form of an ingrained rule of linguistic thrift (discussed below), and engineers seem to be carriers of this meme. The efficacy of the noun string is never challenged (nor are noun strings even recognized), and therefore the meme has tremendous inertia in academia, which propels it into the pragmatic worlds of science and engineering. Like a murmuration of starlings, there is no leader of the meme, and everyone follows him.

Linguistic Thrift

Stringers overvalue concision. In fact, I think that concision in general is a spurious criterion of good technical communication. Density is prized in many domains. When we shop for fruits, vegetables, and other foods, we like a high weight-per-cost ratio. Everyone wants a deal—everyone but the reader. The benefits of density do not reasonably extend to language. It is true that the reader can perceive when a text is bloated, but the reader does not appreciate the linguistic thrift conferred by the noun string. Science and technical communication in general would benefit from a more conversational approach to conveying technical content, but noun strings are decidedly not conversational. Any attempt to impart an economy to a sentence in this way is a failure to understand the nature of a sentence. Stringers of all stripes may reel from this advice—that is, to make their prose more "talky," against their better judgments and even against their formal educations. As my engineer-boss once said to me—defying my attempts to unstring his noun strings—"Fewer, stronger words are better." This is the meme articulated.

Stream of Consciousness

To me, noun strings feel like stream of consciousness, defined by J. A. Cuddon in his *Dictionary of Literary Terms* as a depiction of "the multitudinous thoughts and feelings which pass through the mind." No doubt that the creative process rests on the uninhibited flow of ideas, where the author records thoughts with abandon as they are dislodged without considering their optimal formation into sentences, outputting words (lots of nouns) until his mind is "done." These recorded thoughts form the basis for an outline, annotated outline, working draft, review draft, and so on. But at some point, the author must account for the reader and craft sentences that promote fluid reading. The noun string is one of many ways to fail to reach the reader.

When it comes time to *compose* thoughts into sentences, the burden changes from "I want to get this content right" to "I want to impart the content in a way that the reader can easily understand." Writers must bow their heads to their readers at some point, and this does not seem to occur when engineers construct descriptions of *things*. In fact, engineers seem to make little distinction between the *writing* that occurs in the early stages of a document project and the refined *composition* that occurs later. The operation of the mind is different during these two stages of the documentation process. Writing is free-flowing, while composition is highly constrained. Writers who habitually form noun strings seem to fail to recognize this distinction.

The Ambiguity of Parataxis

The noun strings in the documents of stringers are mostly failures of syntax. *Syntax* is the formation of phrases. *Semantics* is the meanings of the words that you use to form phrases. But *semantics* is also the meaning of a phrase itself. Typically in a noun string, the words themselves are fine, but the way in which those words are put together creates confusion.

Let's look at what is going on in a noun string that makes it difficult for readers. First, we have obvious *parataxis*: the stringing together of words and phrases either without connective tissue at all—conjunctives and prepositions—or with weak conjunctions such as "and." *Hypotaxis* is often invoked as an opposite rhetorical approach to parataxis. Hypotaxis is the subordination of one thing to another, so you use highly meaningful connectives—such as *because, when, after*—to define the relationships between words and phrases. But hypotaxis rarely comes to the rescue of a noun string. The prevention or correction of noun strings requires the brute-force incorporation of prepositions, conjunctions, articles, and active verbs. Instead of leaving off the connective tissue (as in parataxis) and imposing upon the reader the burden of imagining those relationships (and perhaps failing), writers can explicitly and unambiguously provide the signifiers of those relationships. Whereas parataxis *implies* relationships between words, restoring ligatures makes those relationships *explicit* and moves the responsibility for clarity from the reader to the author, where it belongs.

Nominalizing

A nominal is any word that functions as a noun. But as I have said, stringers press nouns into service as adjectives. Often, words that have verbal thrust are used in noun form to function like an adjective (this is called *nominalizing*). For example, *communication* has a complementary verb form:

to communicate. And yet, in a noun string, the nounness of *communication* is preferred over the verbiness of *communicate*. The noun string *change signal communication protocols* could be written with more verbiness as *protocols that communicate change signals*.

I think that stringers focus on *things* instead of *actions*, and so they overcompensate when describing things by stacking descriptors of actions (instead of verbs) that occur to them as they draft their documents. Here's a real-world example of a noun string that nominalizes two perfectly good transitive verbs:

Acme is initiating **an employee charity giving encouragement program**.

You can't make these things up. This example nominalizes "to encourage" and "to give." The unstrung version is:

Acme is initiating **a program to encourage employees to give more to charity**.

How to Correct Noun Strings

Three-Step Process of Unstringing

A previous section of this article described what we want to correct: omitted connective tissue, incorrect word order, nominalized verbs, parataxis, and spurious noun numbering (singular versus plural). Correcting a noun string involves several manipulations—thoughtful manipulations, resulting in the following:

- During unstringing, the primary nominal in the string—the kernel of the noun string—tends to move from the end of the string to the beginning. Modifiers and recovered verb forms follow to clarify this kernel.
- Connective tissue and verb forms are restored, clearly imparting explicit relationships and action to the sentence. Articles—*a, an,* and *the*—and prepositions are extracted from implicit (elliptical) constructions to form explicit ones. Articles improve the rhythm of sentences, and prepositional phrases subordinate properties and characteristics of the primary nominal.
- Nouns that are spuriously used in the singular (because they are used as modifiers) are recast as plurals. For example, "case study examples" becomes "examples of case studies."

Here, then, is a three-step process for correcting a noun string:

1. **Identify it:** What is the anatomy of a noun string? There are five typical characteristics:
   - First, and most conspicuous, a noun string contains three or more consecutive nouns, with an occasional adjective in the mix, although occasionally, two consecutive nouns constitute a noun string, such as "forum for economics discussions," which is more clearly constructed as "forum to discuss economics."
   - Second, the last noun of the string is the true subject of a verb, object of a transitive verb, or object of a preposition. As objects, noun strings are devils to interpretation. One would expect to encounter an object directly after the verb or preposition, but in a noun string, there are other intervening nouns. The noun stringer treats nouns like adjectives and piles them up to service a primary nominal that he is trying to earnestly explain. Therefore, the primary nominal gets pushed toward the end of the sentence, away from its natural slot.
   - Third, the connective tissue (prepositions, conjunctives, and articles), which describes the relationship between the nouns, is missing (implied).
   - Fourth, sometimes a verb masquerades as a noun. This noun has verbal thrust that can be put into play upon the rewrite.
   - Fifth, the true number of a noun may be misrepresented. When a noun is enlisted to serve as an adjective, the singular form of the noun is typically used. However, upon analysis, one may discover that the notion of the noun is plural, and while unstringing the string, the editor can properly represent its plural form.

2. **Analyze it:** Analyzing is "to separate (a material or abstract entity) into constituent parts or elements; determine the elements or essential features of" (*Dictionary.com*). Analyzing a noun string means to determine the meanings and functions of the words *in* the string, as well as the words that are implied. This is sometimes a painful examination because the author does not come attached to the text, and sometimes an editor has to guess the intended meaning. The examination begins with a simple "reflex" test: Does the thing make sense? Some noun strings will be clumsy and impede fluid reading but still make sense. If it doesn't, then recomposing it will be a chore.

3. **Expand and recompose it:** You can call it unstacking, unpacking, unfolding, unstringing, or whatever, but repairing a noun string is literally expanding and recomposing a portion of a sentence. Once you figure out how one noun relates to another (in step 2), you can often use prepositions to declare relationships, recover nominalized verbs, correct the backward syntax, restore the proper number of a noun—in effect, reconstituting the intended meaning.

In the second part of this article, being published later this year in *Intercom*, I will provide examples of the three-step process for unstringing.

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