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SOUNDING BOARD

MEDICAL OBFUSCATION: STRUCTURE AND FUNCTION

MOST medical communications are difficult to read. To determine why, contributions to three issues of the *New England Journal of Medicine* were studied, and the prose analyzed.

MATERIALS AND METHODS

Articles were taken from the *Journal* issues dated April 4, 1974; February 6, 1975; and October 16, 1975. These issues lay buried under a pile of papers on my desk. Articles were read at random.

RESULTS

I identified 10 recurring faults in the *Journal* articles I read.

1. Poor Flow of Ideas

This is the most common and subtle fault plaguing medical communication. Within a single sentence, or from one sentence to another, the ideas expressed do not flow in a readily understandable sequence. Here is the beginning of one article:

> Toluene is an aromatic hydrocarbon that has widespread industrial use as an organic solvent. Inhalation or "sniffing" of toluene-containing substances, including paint sprays, paint and lacquer thinners and household and model glues, has become increasingly frequent in recent years. In spite of extensive exposure to toluene by industrial workers and "solvent sniffers," remarkably little serious toluene toxicity has been reported among such workers. A possibly life-threatening complication of toluene sniffing — reversible renal tubular acidosis with serious electrolyte abnormalities — occurred in the two patients described below.

The two patients described are not industrial workers, but rather elective sniffers. Now, the problem with this paragraph is that it mixes too many ideas in a perplexing way. It begins by defining toluene as an industrial solvent; it then mentions all the household (nonindustrial) sources of toluene; it then refers to the fact that industrial workers and "solvent sniffers" — they are apparently to be distinguished — have had little reported toxicity; finally, we are going to be told of two cases.

The word "industrial" is never mentioned again in the paper. Indeed, the real purpose of the paper is to discuss kidney complications of toluene inhalation, as opposed to the more commonly reported neurologic effects. So the paragraph above is not only garbled, it is also inappropriate to the paper that follows.

This paragraph demonstrates other errors as well.

2. Verbiage

Most sentences in the *New England Journal* contain too many words. Meaning is obscured. The first sentence in the paragraph above has fourteen words. It can easily be shortened to eleven, or eight, with no change in meaning.

A favorite method for increasing the length of a sentence involves liberal application of "in the" and "of." Here is a classic: "Major increases in the volume of prescribing of psychotherapeutic drugs in recent years have led to increasing concern over the overconsumption and misprescribing of such drugs and heightened interest in the pursuit and understanding of factors that might underlie or influence rates of drug use."

3. Redundancy

Medical writing is shot through with redundancy. The most common form is paired words when one would serve nicely: "pursuit and understanding," "underlie or influence," "interest and concern," "support and incentives," "breadth and scope." These phrases seem to suggest marginal distinctions. In fact they are merely clumsy.

Another great favorite is "act to produce."

4. Repetition

The preferred word for repetition is *such*. "It is now available commercially and although its sole indication will be in hypertensive emergencies by no means will or should such a valuable agent be restricted to such use."

Or again: "In addition, it was regarded as a poison whose action, before 1929, was regarded as being similar to sodium cyanide."

Repetition is not merely bad style. It is confusing, particularly when *such* is the repeated word. It's hard to know the referent in such sentences.

In passing, we should note that the sentences above also exhibit some of the faults previously mentioned. In fact, they exhibit all of them.

5. Wrong Word

"Renin should refer purely to the enzyme extracted from the kidney..." The word is *only*, and the choice of the

wrong word here is particularly unfortunate, since the author states two sentences later, "Renin has not been obtained in a completely pure state..."

"Clinical use of the anti-inflammatory agents should be governed by the fact that they are largely non-specific in their action. It is usually wise, unless there is a good reason to the contrary, to start treatment with the least toxic drug and to change therapy only when maximum tolerated doses have proved ineffective."

Here poor flow of ideas throughout a paragraph hangs on a single wrong word. We can say clinical *choice* should be governed by the fact of non-specific action. Or we can say that clinical use should *reflect* the fact of non-specificity. But as the sentence stands, it's ridiculous. Clinical use of anti-inflammatory agents should be governed only by the need for such an agent.

6. Poor Syntax

The following needs no explanation — or does it?

"In one sense, its rather unusual structure with an iron core bristling with five formidable cyanides and an ominous NO group combined with its reputation for liberating cyanide has been the reason for its late emergence.

Sloppy syntax most commonly provides an ambiguous referent: "Angiotensin remains the most powerful pressor agent...It acts principally on arterioles, with very little effect on venules or veins. Although it can be shown under some circumstances to have an effect on cardiac muscle with increased strength and rapidity of action, this action is probably unimportant in vivo." To what does that second *it* refer? Note also the awkwardness of the sentence and the repetition of *action.* When a sentence is badly conceived, it frequently has a lot wrong with it.

7. Excessive Abstraction

"Because it recognizes that inadequacies in the available personnel will inevitably diminish the effectiveness of all programs committed to research, health-science education, and health delivery, the government has acquired a particular interest in the training of biomedical scientists."

And more strikingly:

"Improvement in health care is based, to an important extent, on the viability of the biomedical research enterprise, whose success, in turn, depends on the availability of creative scientists and networks of institutions of excellence capable of producing research and teaching personnel of the highest quality possible."

If you clump enough abstract words together you get at best gray prose. At worst you get pompous nonsense.

8. Unnecessary Complexity

At times it seems as though authors strive to say things with unnecessary complexity. One example will serve: "Inhalation or 'sniffing' of toluene-containing substances..." Why not the more conversational "substances containing toluene"?

9. Excessive Compression

The urge to compose terse scientific prose leads to another kind of difficulty: "Corticosteroids, antimalarial drugs and other agents may impede degranulation, because of their ability to prevent granule membranes from rupturing, to inhibit ingestion or to interfere with the degranulation mechanism per se."

This sentence is ambiguous.

10. Unnecessary Qualification

A form of academic cowardice produces the following:

"Many, *but not all, of the* agents also have valuable analgesic and antipyretic effects."

"Aspirin is *generally considered to be* the primary therapy for most forms of arthritis."

"It is usually wise, *unless there is good reason to the contrary,* to start treatment with the least toxic drug..."

The italicized phrases can all be deleted with no appreciable loss of intellectual caution.

A related form of academic cowardice appears in the careful statement of what an article is not: "Others have detailed the metabolic considerations with hyperalimentation, and these will not be described here." If the eight authors of this paper wanted to give a reference to metabolic aspects of their subject, they should do so directly: "Metabolic features of hyperalimentation are described elsewhere." But in its present form, their statement is unnecessarily cautious. Obviously any paper is *not* a great many things. There is no need to say so.

Discussion

A good deal of work goes into medical articles, and they are reviewed by one or more editors with some care. Why, then, are they so awkward?

The usual explanation of humanists is that scientists are illiterate, or only slightly acquainted with English prose. We can reject this as spiteful.

The usual explanation of scientists is that their subject matter is peculiarly difficult to communicate, because of its inherent complexity. Scientists also complain that journals demand so much compression that clear exposition suffers. This explanation, too, must be rejected, for two reasons.

First, some scientists express their views with striking clarity, even on the most technical points. And second, much of the *New England Journal* each week is not really technical, yet the writing is almost uniformly impenetrable.

It's worth asking whether the evident shortcomings of medical communication serve any purpose for their authors. Is there any advantage to writing in this way?

Medical writing in general is weak. Voices are passive, verbs are transitive, modifiers are abstract, and qualifying clauses abound. The general tone is one of utmost timidity, going far beyond sensible caution. Indeed, it is striking that so many powerful members of the profession — heads of departments, professors, and deans — should choose to

express themselves in so hesitant a fashion. They certainly don't talk or act that way. An eminent surgeon strides purposefully into the operating room each day — but to read his papers, you wonder how he finds the courage to get out of bed in the morning. His writing indicates he is unsure of everything, and has no particular convictions on any subject at all.

One might suppose a weak tone is a way of anticipating and warding off attack, by indicating in advance that the authors' views are only tentatively embraced. But whenever authors are criticized in the letters column of the *Journal,* they invariably respond in strong, brisk, and often stinging sarcastic prose. Thus, defense is not the purpose of a weak tone.

On the other hand, weak writing is hard to read. In fact, the general consequence of all these writing errors is to make medical prose as dense, impressive and forbidding as possible. Even the simplest concepts are re-stated in unrevealing forms. The stance of authors seems designed to astound and mystify the reader with a dazzling display of knowledge and scientific acumen.

Viewed in this way, medical communications begin to make sense. If the authors of these papers really wanted to be understood in a straightforward way, they would write simply and express their ideas in the clearest, most unambiguous form they could manage. Instead they do just the opposite. What they are communicating is their profound *scientific-ness,* not whatever the title of their paper may be.

One could argue that the authors of the *New England Journal* are not so different from, say, professors of comparative linguistics, and other academics who are fond of making themselves difficult. And certainly it is true that many thin papers look better with liberal doses of garbled scientific prose. But the question must still be asked: why has this form of medical communication become a standard within the profession?

Contrary to popular belief, there is little historical precedent for bad writing. Scientific prose is usually said to begin with Galileo, and *The Starry Messenger* is a classic of vigorous exposition. Even as late as the 19th century, physicians stated their views with strength and conviction. Only in the 20th century has obfuscation become widely acceptable.

Of course, it is traditional for physicians to conceal their knowledge from patients, through judicious use of language. The 13th-century surgeon Arnold of Villanova wrote: "You may not find out anything about the case. Then say that he has an obstruction of the liver, and particularly use the word, obstruction, because they do not understand what it means, and it helps greatly that a term is not understood by the people."

Such practices continue to the present day. But only recently have physicians begun to use language to conceal knowledge from each other. Simple jargon is not adequate here — everyone knows the jargon — so other linguistic devices must be employed. Grammatical error is bound to work. The rules of grammar exist in large part to permit readers and writers to operate from a shared set of expectations. Breaking these rules — once the hallmark of the uneducated — is now employed in medicine by the educated writer to confuse his equally educated reader. It's a rather ruthless way of getting the job done, and of course one must bear the sneers of those in other fields, who mistakenly view run-on sentences, verbose writing, and sloppy syntax as proof of inferior education and inept thought.

In any case, it now appears that obligatory obfuscation is a firm tradition within the medical profession. Since everyone employs the same technics, surely no one is fooled by these linguistic maneuvers. With time, they have simply become the accepted mode of expression. Medical obscurity may now serve an intra-group recognition function, rather like a secret fraternal handshake. In any event it is a game, and everybody plays it. Indeed, I suspect one refuses to play at one's professional peril. This may explain why only the most eminent physicians, the Cushings and Oslers, feel free to express themselves lucidly. They are above attack.

But it seems important to mention that the medical profession pays a price for adopting this particular form of internal discourse. The most obvious has already been mentioned — the low opinion of outsiders. Since educated laymen no longer share the same linguistic conventions as physicians, they misinterpret prose strewn with high-school grammatical errors, and their confidence is undermined. At a time when many doctors feel misunderstood by society, I suspect they have only themselves to blame.

Other drawbacks to medical obscurity affect only the profession. If one must write an article in this abominable fashion — avoiding simplicity at all costs — it is naturally quite hard to compose. In many laboratories publication lags behind research because nobody wants to do the writing, when in fact a direct statement of work done would be easy enough. Furthermore, for a profession whose members are all supposedly short of time, this method of communication is extremely time-consuming to read. It's not surprising that many physicians rely on abstracts and oral reports at conferences.

A final point concerns cross-fertilization. With medical writing as forbidding as it is, workers tend to read only papers in their own fields, disregarding others since — as many freely admit — they can't understand them. But medicine is still too young, and its inter-relations too poorly defined, to encourage premature fragmentation of knowledge. It is impossible to guess the cost here in wasted time, duplicated findings, and buried pearls. But such a cost surely exists, and must be reckoned with.

In summary, medical writing is bad, but its functions are perfectly understandable as a display of scientific profundity, and not as an attempt to communicate experience. The profession sees some virtue in this state of affairs, and pays a price which it is apparently willing to pay.

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