

METAMAGICAL THEMAS:

**Questing for the Essence
of Mind and Pattern**

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2

Self-Referential Sentences: A Follow-Up

January, 1982

AS January has rolled around again, I thought I'd give a follow-up to my column of a year ago on self-referential sentences, and that is what this column is; however, before we get any further, I would like to take advantage of this opening paragraph to warn those readers whose sensibilities are offended by explicit self-referential material that they probably will want to quit reading before they reach the end of this paragraph, or for that matter, this sentence—in fact, this clause—even this noun phrase—in short, *this*.

Well, now that we've gotten *that* out of the way, I would like to say that, since last January, I have received piles upon piles of self-referential mail. Tony Durham astutely surmised: "What with the likely volume of replies, I should not think you are reading this in person." John C. Waugh's letter yelped: "Help, I'm buried under an avalanche of reader's responses!" At first, I thought Waugh himself was empathizing with my plight, putting words into my own mouth, but then I realized it was his *letter* calling for help. Fortunately, it was rescued, and now is comfortably nestled in a much reduced pile. Indeed, I have had to cull from that massive influx of hundreds of replies a very small number. Here I shall present some of my favorites.

Before leaving the topic of mail, I would like to point out that the postmark on Ivan Vince's postcard from Britain cryptically remarked, "Be properly addressed." Was this an order issued by the post office to the postcard itself? If so, then British postcards must be far more intelligent than American ones; I have yet to meet a postcard that could read, let alone correct its own address. (One postcard that reached me was addressed to me in care of *Omni* magazine! And yet somehow it arrived.)

I was flattered by a couple of self-undermining compliments. Richard Ruttan wrote, "I just can't tell you how much I enjoyed your first article", and John Collins said, "This does not communicate my delight at January's column." I was also pleased to learn that my fame had spread as far as the men's room at the Tufts University Philosophy Department, where Dan

Dennett discovered “This sentence is graffiti. —Douglas R. Hofstadter” penned on the wall.

* * *

A popular pastime was the search for interesting self-answering questions. However, only a few succeeded in genuinely “jootsing” (jumping out of the system), which, to me, means being truly novel. It seems that successes in this limited art form are not easy to come by. John Flagg cynically remarked (I paraphrase slightly): “Ask a self-answering question, and get a self-questioning answer.” One of my favorites was given by Henry Taves: “I fondly remember a history exam I encountered in boarding school that contained the following: ‘IV. Write a question suitable for a final exam in this course, and then answer it.’ My response was simply to copy that sentence twice.” I was delighted by this. Later, upon reflection, I began to suspect something was slightly wrong here. What do you think?

Richard Showstack contributed two droll self-answering questions: “What question no verb?” and “What is a question that mentions the word ‘umbrella’ for no apparent reason?” Jim Shiley sent in a clever entry that I modify slightly into “Is this a rhetorical question, or is this a rhetorical question?” He also contributed the following idea:

Take a blank sheet of paper and on it write:

How far across the page will this sentence run?

Now if some polyglot friend of yours points out that the same string of phonemes in Ural-Altaic means ‘2.3 inches’, send me a free subscription to *Scientific American*. Otherwise, if the inscription of a question counts both as the question and as unit of measure, I at least get a booby prize. But I think somehow I bent the rules.

My own solutions to the problem of the self-answering question are actually not so much self-*answering* as self-*provoking*, as in the following example: “Why are you asking me *that* out of the blue?” It is obvious that when the question is asked out of the blue, it might well elicit an identical response, indicating the hearer’s bewilderment.

Philip Cohen relayed the following anecdote about a self-answering question, from Damon Knight: “Terry Carr, an old friend, sent us a riddle on a postcard, then the answer on another postcard. Then he sent us another riddle: ‘How do you keep a turkey in suspense?’ and never sent the answer. After about two weeks, we realized that *was* the answer.”

* * *

Several of the real masterpieces sent in belong to what I call the *self-documenting* category, of which a simple example is Jonathan Post’s “This

Self-Referential Sentences: A Follow-Up

sentence contains ten words, eighteen syllables and sixty-four letters.” A neat twist is supplied by John Atkins in his sentence “ ‘Has eighteen letters’ does.” The self-documenting form can get much more convoluted and introspective. An example by the wordplay master Howard Bergerson was brought to my attention by Philip Cohen. It goes:

In this sentence, the word *and* occurs twice, the word *eight* occurs twice, the word *four* occurs twice, the word *fourteen* occurs four times, the word *in* occurs twice, the word *seven* occurs twice, the word *the* occurs fourteen times, the word *this* occurs twice, the word *times* occurs seven times, the word *twice* occurs eight times and the word *word* occurs fourteen times.

That is good, but the gold medal in the category is reserved for Lee Sallows, who submitted the following *tour de force*:

Only the fool would take trouble to verify that his sentence was composed of ten a's, three b's, four c's, four d's, forty-six e's, sixteen f's, four g's, thirteen h's, fifteen i's, two k's, nine l's, four m's, twenty-five n's, twenty-four o's, five p's, sixteen r's, forty-one s's, thirty-seven t's, ten u's, eight v's, eight w's, four x's, eleven y's, twenty-seven commas, twenty-three apostrophes, seven hyphens, and, last but not least, a single !

I (perhaps the fool) did take trouble to verify the whole thing. First, though, I carried out some spot checks. And I must say that when the first random spot check worked (I think I checked the number of 'g's), this had a strong psychological effect: all of a sudden, the credibility rating of the *whole sentence* shot way up for me. It strikes me as weird (and wonderful) how, in certain situations, the verification of a tiny percentage of a theory can serve to powerfully strengthen your belief in the full theory. And perhaps that's the whole point of the sentence!

The noted logician Raphael Robinson submitted a playful puzzle in the self-documenting genre. Readers are asked to complete the following sentence:

In this sentence, the number of occurrences of 0 is __, of 1 is __, of 2 is __, of 3 is __, of 4 is __, of 5 is __, of 6 is __, of 7 is __, of 8 is __, and of 9 is __.

Each blank is to be filled with a numeral of one or more digits, written in decimal notation. Robinson states that there are exactly two solutions. Readers might also search for two sentences of this form that document each other, or even longer loops of that kind.

Clearly the ultimate in self-documentation would be a sentence that does more than merely inventory its parts; it would be a sentence that includes a rule as well, telling all the King's men how to put those parts back together again to create a full sentence—in short, a self-reproducing sentence. Such

Self-Referential Sentences: A Follow-Up

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a sentence is Willard Van Orman Quine's English rendition of Kurt Gödel's classic metamathematical homage to Epimenides the Cretan:

"yields falsehood when appended to its quotation." yields falsehood when appended to its quotation.

Quine's sentence in effect tells the reader how to construct a replica of the sentence being read, and then (just for good measure) adds that the replica (not *itself*, for heaven's sake!) asserts a falsity! It's a bit reminiscent of the famous remark made by Epilopsides the Concretan (second cousin of Epimenides) to Flora, a beautiful young woman whose ardent love he could not return (he was betrothed to her twin sister Fauna): "Take heart, my dear. I have a suggestion that may cheer you up. Just take one of these cells from my muscular biceps here, and clone it. You'll soon wind up with a dashing blade who looks and thinks just like me! But *do* watch out for him—he is given to telling beautiful women real whoppers!"

* * *

In the early 1950's, John von Neumann worked hard trying to design a machine that could build a replica of itself out of raw materials. He came up with a theoretical design consisting of hundreds of thousands of parts. Seen in hindsight and with a considerable degree of abstraction, the idea behind von Neumann's self-reproducing machine turns out to be pretty similar to the means by which DNA replicates itself. And this in turn is close to Gödel's method of constructing a self-referential sentence in a mathematical language in which at first there seems to be no way of referring to the language itself.

The First Every-Other-Decade Von Neumann Challenge is thus hereby presented for ambitious readers: Create a comprehensible and not unreasonably long self-documenting sentence that not only lists its parts (at the word level or, better yet, the letter level) but also tells how to put them together so that the sentence reconstitutes itself. (Notice, by the way, the requirement is that the sentence be *not unreasonably long*, which is different—very different—from being *reasonably long*.) The parts list (or *seed*) should be an inventory of words or typographical symbols, more or less as in the sentences created by Howard Bergerson and Lee Sallows. The inventoried symbols should in some way be clearly distinguishable from the text that talks about them. For instance, they can be enclosed in quotation marks, printed in another typeface, or referred to by name. It is not so important what convention is adopted, so long as the distinction is sharp. The rest of the sentence (the *building rule*) should be printed normally, since it is to be regarded not as typographical raw material but as a set of instructions. This is the use-mention distinction I discussed in Chapter 1, and to disregard it

is a serious conceptual weakness. (It is a flaw in Sallows' sentence that slightly tarnishes the gold on his medal.)

The building rule may not talk about normally-printed material—only about parts of the inventory. Thus, it is not permitted for the building rule to refer to itself in any way! The building rule has to describe structure explicitly. Furthermore (and this is the subtlest and probably the most often overlooked aspect of self-reference), the building rule must specify which parts are to be printed normally and which parts in quotes (or however the raw materials are being indicated). In this respect, Bergerson's sentence fails. Although, to its credit, it sharply distinguishes between use and mention by relying on upper case for the names of inventory items and lower case for item counts and filler words, it does not have separate inventories for items in upper case and lower case. Instead it lumps the two together, blurring a vital distinction.

In the Von Neumann Challenge, extra points will be awarded for solutions given in Basic English, or whose seed is entirely at the letter level (as in Sallows' sentence). The Quine sentence, although it clearly incorporates a seed (the seven-word phrase in quotation marks) and a building rule (that of appending something to its quotation), is not a legal entry because its seed is too far from being raw material. It is so structured that it is like a fetus more than it is like a zygote.

* * *

There is a very good reason, by the way, that the Quine sentence's seed is so complicated—in fact, is identical with the building rule, except for the quotation marks. The reason is simple to state: You've got to *build a copy of the building rule* out of raw materials, and the more your building rule looks like your seed, the simpler it will be to build a copy of it from a copy of the seed. To make a full new sentence, all you need to do is make two copies of the seed, carry out whatever simple manipulations will convert one copy of the seed into the building rule, and then splice the other copy of the seed onto the newly minted building rule to make up a complete new sentence, fresh off the assembly line.

To make this clearer, it is helpful to show a slight variation on Quine's sentence. Imagine that you could recognize only the lowercase roman letters, and that uppercase letters were alien to you. Then text printed in upper case would, for all practical purposes, be devoid of meaning or interest, whereas text in lower case would be full of meaning and interest, able to suggest ideas or actions in your mind. Now suppose someone gave you a conversion table that matched each uppercase letter with its lowercase counterpart, so that you could "decode" uppercase text. Then one day you came across this piece of "meaningless" uppercase text:

YIELDS A FALSEHOOD WHEN USED AS THE SUBJECT OF ITS LOWERCASE VERSION

On being decoded, it would yield a lowercase sentence, or rather, a lowercase sentence fragment—a predicate without a subject. Suggestive, eh? What might you try out, as a possible subject of that predicate?

This notion of two parallel alphabets, one in which text is inert and meaningless and the other in which text is active and meaningful, may strike you as yielding no more than a minor variation on Quine's sentence, but in fact it is very similar to an exceedingly clever trick that nature discovered and has exploited in every cell of every living organism. Our seed—our genome—our DNA—is a huge long volume of *inert* text written in a chemical alphabet that has 64 “uppercase” letters (codons). Our building rules—our enzymes—are short, pithy slogans of *active* text written in a different chemical alphabet that has just twenty “lowercase” letters (amino acids). There is a map (the genetic code) that converts uppercase letters into lowercase ones. Obviously, some lowercase letters must correspond to more than one uppercase letter, but here that is a detail. It also turns out that three characters of the uppercase alphabet are not letters but punctuation marks telling where one pithy slogan ends and the next one begins—but again, these are details. (See Chapter 27 for some of those details.)

Once you know this mapping, you often won't even remember to distinguish between the two chemical alphabets: the inert uppercase codon alphabet and the active lowercase amino acid alphabet. The main thing is that, armed with the genetic code, you can read the DNA book (seed) as if it were a sequence of enzyme slogans (building rules) telling how to write a new DNA book together with a new set of enzyme slogans! It is a perfect parallel to our variation on the Quine sentence, where inert, uppercase seed-text was converted into active, lowercase rule-text that told how to make a copy of the full Quine sentence, given its seed.

A cell's DNA and enzymes act like the seed and building rules of Quine's sentence, or the parts list and building rules of von Neumann's self-reproducing automaton—or then again, like the seed and building rules of computer programs that print themselves out. It is amazing how universal this mechanism of self-reference is, and for that reason I always find it quaint that people who rant and rave against the silliness of self-reference are themselves composed of trillions and trillions of tiny self-referential molecules.

* * *

Scott Kim and I constructed an intriguing pair of sentences:

The following sentence is totally identical with this one, except that the words 'following' and 'preceding' have been exchanged, as have the words 'except' and 'in', and the phrases 'identical with' and 'different from'.

The preceding sentence is totally different from this one, in that the words 'preceding' and 'following' have been exchanged, as have the words 'in' and 'except', and the phrases 'different from' and 'identical with'.

At first glance, these sentences are reminiscent of a two-step variant on the Epimenides paradox ("The following sentence is true"; "The preceding sentence is false"). On second glance, though, they are seen to say exactly the same thing. Curiously, my Australian colleague and sometime alter ego, Egbert B. Gebstadter, writing in his ever fascinating but often-furiating monthly row "Thetamagical Memas" (which appears in *Literary Australian*), disagrees with me; he maintains they say totally different things. (See figure 2-1.)

Not surprisingly, several of the sentences submitted by readers had a paradoxical flavor. Some were variants on Bertrand Russell's paradox about the barber who shaves all those who do not shave themselves, or the set of all sets that do not include themselves as elements. For instance, Gerald Hull concocted this strange sentence: "This sentence refers to every sentence that does not refer to itself." Is Hull's concoction self-referential, or is it not? In a similar vein, Michael Gardner cited a Reed College senior thesis whose dedication ran: "This thesis is dedicated to all those who did not dedicate their theses to themselves." The book *Model Theory*, by C. C. Chang and H. J. Keisler, bears a similar dedication, as Charles Brenner pointed out to me. He also suggested another variant on Russell's paradox: Write a computer program that prints out a list of all programs that do not ever print themselves out. The question is, of course: Will this program ever print itself out?

One of the most disorienting sentences came from Robert Boeninger: "This sentence does in fact not have the property it claims not to have." Got that? A serious problem seems to be to figure out just what property it is that the sentence claims it lacks.

The Dutch mathematician Hans Freudenthal sent along a charming paradoxical anecdote based on self-reference:

There is a story by the eighteenth-century German Christian Gellert called "Der Bauer und sein Sohn" ("The Peasant and His Son"). One day during a walk, when the son tells a big lie, his father direly warns him about the "Liars' Bridge", which they are approaching. This bridge always collapses when a liar walks across it. After hearing this frightening warning, the boy admits his lie and confesses the truth.

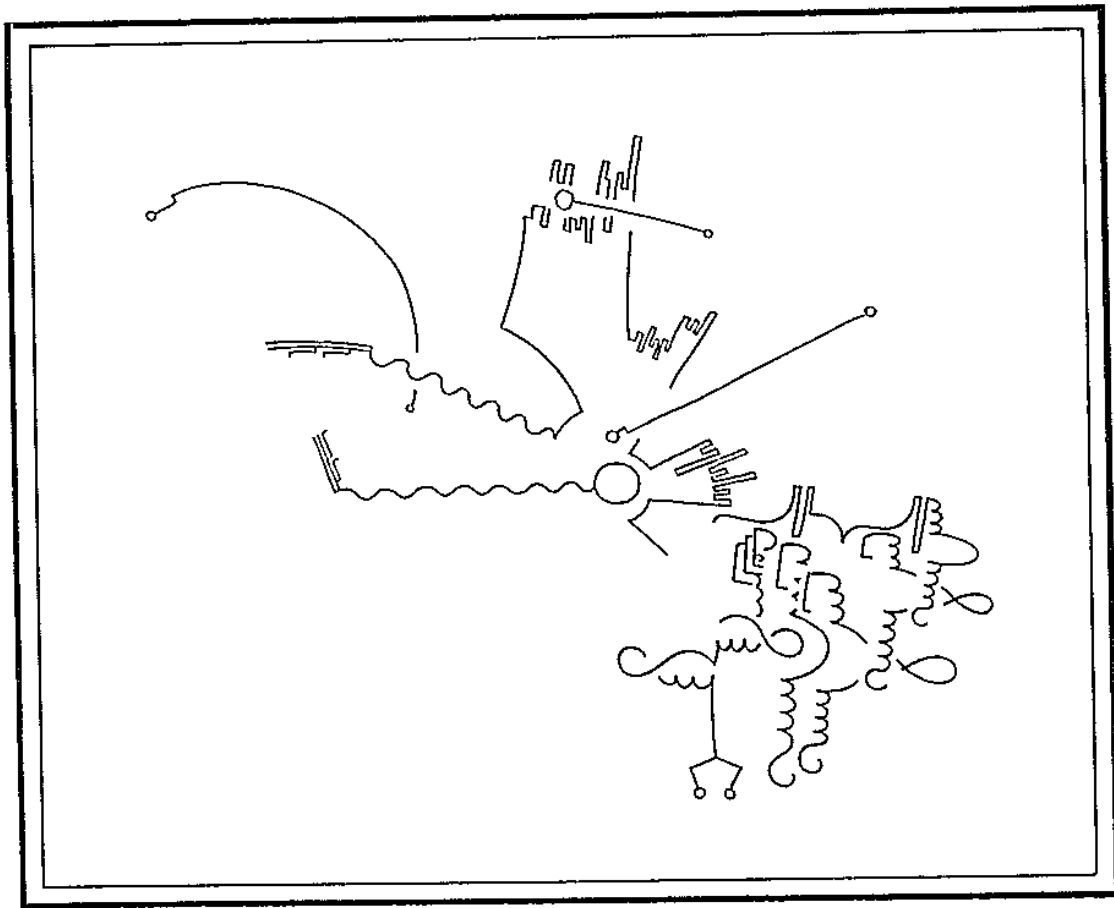
When I [Freudenthal] told a ten-year-old boy this story, he asked me what happened when they eventually came to the bridge. I replied, "It collapsed under the father, who had lied, since in fact there is no Liars' Bridge." (Or did it?)

C. W. Smith, writing from London, Ontario, described a situation reminiscent of the Epimenides paradox:

THE TAMAGICAL MEMAS:

Seeking the Whence
of Letter and Spirit

EGBERT B. GEBSTADTER



*A Copious Concatenation of
Artsy, Scientific, and Literal Mumbo-Jumbo*

During the 1960's, standing alone in the midst of a weed-strewn field in this city, there was a weathered sign that read: "\$25 reward for information leading to the arrest and conviction of anyone removing this sign." For whatever it's worth, the sign has long since disappeared. And so, for that matter, has the field.

Incidentally, the Epimenides paradox should not be confused with the Nixonides paradox, first uttered by Nixonides the Cretin in A.D. 1974: "This statement is inoperative." Speaking of Epimenides, one of the most elegant variations on his paradox is the "Errata" section in a hypothetical book described by Beverly Rowe. It looks like this:

(vi)

Errata

Page (vi): For *Errata*, read *Erratum*

Closely related to the truly paradoxical sentences are those that belong to what I call the *neurotic* and *healthy* categories. A healthy sentence is one that, so to speak, practices what it preaches, whereas a neurotic sentence is one that says one thing while doing its opposite. Alan Auerbach has given us a good example in each category. His healthy sentence is: "Terse!" His neurotic sentence is: "Proper writing—and you've heard this a million times—avoids exaggeration." Here's a healthy one by Brad Shelton: "Fourscore and seven words ago, this sentence hadn't started yet." One of the jootsingest of sentences came from Carl Bender:

The rest of this sentence is written in Thailand, on

Consider a related sentence sent in by David Stork: "It goes without saying

FIGURE 2-1. The cover of Egbert B. Gebstadter's latest book, showing some of his "Whorly Art." See the Bibliography for a short description of the book.

Gebstadter, best known as the author of *Copper, Silver, Gold: an Indestructible Metallic Alloy*, also co-edited *The Brain's U* with Australian philosopher Denial E. Dunnitt, and for two and a half years wrote a monthly row ("Thetamagical Memas") for *Literary Australian*. Having spent the last several years in the Psychology Department of Pakistania University in Wiltington, Pakistania, he has recently joined the faculty of the Computer Science Department of the University of Mishuggan in Tom Treeline, Mishuggan, where he occupies the Rexall Chair in the College of Art, Sciences, and Letters. His current research projects in IA (intelligent artifice) are called *Quest-Essence*, *Mind Pattern*, *Intellect*, and *Studio*. His focus is on deterministic sequential models of digital emotion.

that . . .” To which category does it belong? Perhaps it is a psychotic sentence.

Pete Maclean contributed a puzzling one: “If the meanings of ‘true’ and ‘false’ were switched, then this sentence wouldn’t be false.” I’m still scratching my head over what that means! Dan Krimm wrote to tell me: “I’ve heard that this sentence is a rumor.” Linda Simonetti contributed the following example, “which actually is not a complete sentence, but merely a subordinate clause.” Douglas Wolfe offered the following neurotic rule of thumb: “Never use the imperative, and it is also never proper to construct a sentence using mixed moods.” David Moser reminded me of a slogan that the *National Lampoon* once used: “So funny it sells without a slogan!” Perry Weddle wrote, “I’m trying to teach my parrot to say, ‘I don’t understand a thing I say.’ When *I* say it, it’s viciously self-referential, but in *his* case?” Stephen Coombs pointed out that “A sentence may self-refer in the verb.” My mother, Nancy Hofstadter, heard Secretary of State Alexander Haig describe a warning message to the Russians as “a calculated ambiguity that would be clearly understood”. Yes, Sir!

Jim Propp submitted a sequence of sentences that slide elegantly from the neurotically healthy to the healthily neurotic:

- (1) This sentence every third, but it still comprehensible.
- (2) This would easier understand fewer had omitted.
- (3) This impossible except context.
- (4) 4’33” attempt idea.
- (5)

The penultimate sentence refers to John Cage’s famous piece of piano music consisting of four minutes and 33 seconds of silence. The last sentence might well be an excerpt from *The Wit and Wisdom of Spiro T. Agnew*, although it is too short an excerpt to be sure. Propp also sent along the following healthy sentence, which was apparently inspired by his readings in the book *Intelligence in Ape and Man*, by David Premack: “By the ‘productivity’ of language, I mean the ability of language to introduce new words in terms of old ones.”

Philosopher Howard DeLong contributed what might be considered a neurotic syllogism:

All invalid syllogisms break at least one rule.
This syllogism breaks at least one rule.

Therefore, this syllogism is invalid.

Several readers pointed out phrases and jokes that have been making the rounds. D.A. Treissman, for instance, reminded me that “Nostalgia ain’t what it used to be.” Henry Taves mentioned the delightful T-shirts adorned

with statements such as “My folks went to Florida and all they brought back for me was this lousy T-shirt!” And John Fletcher described an episode of the television program *Laugh-In* a few years ago on which Joanne Worley sang, “I’m just a girl who can’t say ‘n . . .’, ‘n . . .’, ‘n . . .’”. John Healy wrote, “I used to think I was indecisive, but now I’m not so sure.”

I myself have a few contributions to this collection. A neurotic one is: “In this sentence, the concluding three words ‘were left out’.” Or is it neurotic? These things confuse me! In any case, a most healthy sentence is: “This sentence offers its reader(s) various alternatives/options that he or she (or they) is (are) free to accept and/or reject.” And then there is the inevitable “This sentence is neurotic.” The thing is, if it *is* neurotic, it practices what it preaches, so it’s healthy and therefore cannot be neurotic—but then if it *isn’t* neurotic, it’s the opposite of what it claims to be, so it’s *got* to be neurotic. No wonder it’s neurotic, poor thing!

Speaking of neurotic sentences, what about sentences with identity crises? These are, in some sense, the most interesting ones of all to me. A typical example is Dan Krimm’s vaguely apprehensive question, “If I stated something else, would it still be me?” I thought this could be worded better, so I revised it slightly, as follows: “If I said something else, would it still be me saying it?” I still was not happy, so I wrote one more version: “In another world, could I have been a sentence about Humphrey Bogart?” When I paused to reflect on what I had done, I realized that in reworking Dan’s sentence, I had tampered with its identity in the very way it feared. The question remained, however: Were all these variants really the same sentence, deep down? My last experiment along these lines was: “In another world, could this sentence have been Dan Krimm’s sentence?”

Clearly some readers were thinking along parallel lines, since John Atkins queried, “Can anyone explain why this would still be the same magazine without this query, and yet this would not be the same query without this word?” (Of course, just which word “this word” refers to is a little vague, but the idea is clear.) And Loul McIntosh, who works at a rehabilitation center for formerly schizophrenic patients, had a question connecting personal identity with self-referential sentences: “If I were you, who would be reading this sentence?” She then added: “That’s what I get for working with schizophrenics.” This brings me to Peter M. Brigham, M.D., who in his work ran across a severe case of literary schizophrenia: “You have, of course, just begun reading the sentence that you have just finished reading.” It’s one of my favorites.

Pursuing the slithery snake of self in his own way, Uilliam M. Bricken, Jr., wrote in: “If you think this sentence is confusing, then change one pig.” Now, *anyone* can see that this doesn’t make any sense at all. Surely what he meant was, “If you think this sentence is confusing, then *roast* one pig.”—don’t ewe agree? By the by, if ewe think “Uilliam” is confusing, then roast one ewe. And while we’re mentioning ewes, what’s a nice word like “ewe” doing in a foxy paragraph like this?

A while back, driving home late at night, I tuned in to a radio talk show about pets. A heated discussion was taking place about the relative merits of various species, and at one point the announcer mused, "If a dog had written this broadcast, he might have said that *people* are inferior because they don't wag their tails." This gave me paws for thought: What might this column have been like if it had been written by a dog? I can't say for *sure*, but I have a hunch it would have been about chasing squirrels. And it might have had a paragraph speculating about what this column would have been like if it had been written by a squirrel.

* * *

I think my favorite of all the sent-in-ces was one contributed by Harold Cooper. He was inspired by Scott Kim's counterfactual self-referential question: "What would this sentence be like if π were 3?" His answer is shown in Figure 2-2. This, to me, exemplifies the meaning of the verb

If π were 3, this sentence
would look something like this.

FIGURE 2-2. *A counterfactual self-referential sentence, inspired by Harold Cooper and Scott Kim.*

"joots". The six-sided 'o's represent the fact that the ratio of the circumference to the diameter of a hexagon is 3. Clearly, in Cooper's mind, if π were 3, why, what more natural conclusion than that *circles would be hexagons*! Who could ever think otherwise? I was intrigued by the fact that, as π 's value slipped to 3, not only did circles turn into hexagons, but also the interrogative mood slipped into the declarative mood. Remember that the question asked how the question itself would be in that strange subjunctive world. Would it lose its curiosity about itself and cease to be a question? I did not see why that personality trait of the sentence would be affected by the value of π . On the other hand, it seemed obvious to me that if π were 3, the antecedent of the conditional should no longer be subjunctive. In fact, rather than saying "if π were 3", it should say, "*because π is 3*" (or something to that effect). Putting my thoughts together, then, I came up with a slight variation on Cooper's sentence: "What is this sentence like, π being 3 (as usual)?"

Self-Referential Sentences: A Follow-Up

Several readers were interested in sentences that refer to the language they are in (or not in, as the case may be). An example is "If you spoke English, you'd be in your home language now." Jim Propp sent in a delightful pair of such sentences that need to be read together:

Cette phrase se réfère à elle-même, mais d'une manière peu évidente à la plupart des Américains.

Plim glorkle pegram ut replat, trull gen ris clanter froat veb nup lamerack gla smurp Earthlings.

If you do not understand the first sentence, just get a Martian friend to help you decode the second one. That will provide hints about the first. (I apologize for leaving off the proper Martian accent marks, but they were not available in this typeface.)

* * *

Last January, I published several sentences by David Moser and mentioned that he had written an entire story consisting of self-referential sentences. Many readers were intrigued. I decided there could be no better way to conclude this column than to print David's story in its entirety. So here 'tis!

This Is the Title of This Story, Which Is Also Found Several Times in the Story Itself

This is the first sentence of this story. This is the second sentence. This is the title of this story, which is also found several times in the story itself. This sentence is questioning the intrinsic value of the first two sentences. This sentence is to inform you, in case you haven't already realized it, that this is a self-referential story, that is, a story containing sentences that refer to their own structure and function. This is a sentence that provides an ending to the first paragraph.

This is the first sentence of a new paragraph in a self-referential story. This sentence is introducing you to the protagonist of the story, a young boy named Billy. This sentence is telling you that Billy is blond and blue-eyed and American and twelve years old and strangling his mother. This sentence comments on the awkward nature of the self-referential narrative form while recognizing the strange and playful detachment it affords the writer. As if illustrating the point made by the last sentence, this sentence reminds us, with no trace of facetiousness, that children are a precious gift from God and that the world is a better place when graced by the unique joys and delights they bring to it.

This sentence describes Billy's mother's bulging eyes and protruding

tongue and makes reference to the unpleasant choking and gagging noises she's making. This sentence makes the observation that these are uncertain and difficult times, and that relationships, even seemingly deep-rooted and permanent ones, do have a tendency to break down.

Introduces, in this paragraph, the device of sentence fragments. A sentence fragment. Another. Good device. Will be used more later.

This is actually the last sentence of the story but has been placed here by mistake. This is the title of this story, which is also found several times in the story itself. As Gregor Samsa awoke one morning from uneasy dreams he found himself in his bed transformed into a gigantic insect. This sentence informs you that the preceding sentence is from another story entirely (a much better one, it must be noted) and has no place at all in this particular narrative. Despite the claims of the preceding sentence, this sentence feels compelled to inform you that the story you are reading is in actuality "The Metamorphosis" by Franz Kafka, and that the sentence referred to by the preceding sentence is the *only* sentence which does indeed belong in this story. This sentence overrides the preceding sentence by informing the reader (poor, confused wretch) that this piece of literature is actually the Declaration of Independence, but that the author, in a show of extreme negligence (if not malicious sabotage), has so far failed to include even *one single sentence* from that stirring document, although he has condescended to use a small sentence *fragment*, namely, "When in the course of human events", embedded in quotation marks near the end of a sentence. Showing a keen awareness of the boredom and downright hostility of the average reader with regard to the pointless conceptual games indulged in by the preceding sentences, *this* sentence returns us at last to the scenario of the story by asking the question, "Why is Billy strangling his mother?" This sentence attempts to shed some light on the question posed by the preceding sentence but fails. *This* sentence, however, succeeds, in that it suggests a possible incestuous relationship between Billy and his mother and alludes to the concomitant Freudian complications any astute reader will immediately envision. Incest. The unspeakable taboo. The universal prohibition. Incest. And notice the sentence fragments? Good literary device. Will be used more later.

This is the first sentence in a new paragraph. This is the last sentence in a new paragraph.

This sentence can serve as either the beginning of the paragraph or the end, depending on its placement. This is the title of this story, which is also found several times in the story itself. This sentence raises a serious objection to the entire class of self-referential sentences that merely comment on their own function or placement within the story (*e.g.*, the preceding four sentences), on the grounds that they are monotonously predictable, unforgivably self-indulgent, and merely serve to distract the reader from the real subject of this story, which at this point seems to concern strangulation and incest and who knows what other delightful

topics. The purpose of this sentence is to point out that the preceding sentence, while not itself a member of the class of self-referential sentences it objects to, nevertheless *also* serves merely to distract the reader from the real subject of this story, which actually concerns Gregor Samsa's inexplicable transformation into a gigantic insect (despite the vociferous counterclaims of other well-meaning although misinformed sentences). This sentence can serve as either the beginning of a paragraph or the end, depending on its placement.

This is the title of this story, which is also found several times in the story itself. This is *almost* the title of the story, which is found only once in the story itself. This sentence regretfully states that up to this point the self-referential mode of narrative has had a paralyzing effect on the actual progress of the story itself—that is, these sentences have been so concerned with analyzing themselves and their role in the story that they have failed by and large to perform their function as communicators of events and ideas that one hopes coalesce into a plot, character development, etc.—in short, the very *raison d'être* of any respectable, hardworking sentence in the midst of a piece of compelling prose fiction. This sentence in addition points out the obvious analogy between the plight of these agonizingly self-aware sentences and similarly afflicted human beings, and it points out the analogous paralyzing effects wrought by excessive and tortured self-examination.

The purpose of this sentence (which can also serve as a paragraph) is to speculate that if the Declaration of Independence had been worded and structured as lackadaisically and incoherently as this story has been so far, there's no telling what kind of warped libertine society we'd be living in now or to what depths of decadence the inhabitants of this country might have sunk, even to the point of deranged and debased writers constructing irritatingly cumbersome and needlessly prolix sentences that sometimes possess the questionable if not downright undesirable quality of referring to themselves and they sometimes even become run-on sentences or exhibit other signs of inexcusably sloppy grammar like unneeded superfluous redundancies that almost certainly would have insidious effects on the lifestyle and morals of our impressionable youth, leading them to commit incest or even murder and maybe *that's* why Billy is strangling his mother, because of sentences *just like this one*, which have no discernible goals or perspicuous purpose and just end up anywhere, even in mid

Bizarre. A sentence fragment. Another fragment. Twelve years old. This is a sentence that. Fragmented. And strangling his mother. Sorry, sorry. Bizarre. This. More fragments. This is it. Fragments. The title of this story, which. Blond. Sorry, sorry. Fragment after fragment. Harder. This is a sentence that. Fragments. Damn good device.

The purpose of this sentence is threefold: (1) to apologize for the unfortunate and inexplicable lapse exhibited by the preceding paragraph; (2) to assure you, the reader, that it will not happen again; and (3) to

reiterate the point that these are uncertain and difficult times and that aspects of language, even seemingly stable and deeply rooted ones such as syntax and meaning, do break down. This sentence adds nothing substantial to the sentiments of the preceding sentence but merely provides a concluding sentence to this paragraph, which otherwise might not have one.

This sentence, in a sudden and courageous burst of altruism, tries to abandon the self-referential mode but fails. This sentence tries again, but the attempt is doomed from the start.

This sentence, in a last-ditch attempt to infuse some iota of story line into this paralyzed prose piece, quickly alludes to Billy's frantic cover-up attempts, followed by a lyrical, touching, and beautifully written passage wherein Billy is reconciled with his father (thus resolving the subliminal Freudian conflicts obvious to any astute reader) and a final exciting police chase scene during which Billy is accidentally shot and killed by a panicky rookie policeman who is coincidentally named Billy. This sentence, although basically in complete sympathy with the laudable efforts of the preceding action-packed sentence, reminds the reader that such allusions to a story that doesn't, in fact, yet exist are no substitute for the real thing and therefore will not get the author (indolent goof-off that he is) off the proverbial hook.

Paragraph. Paragraph. Paragraph. Paragraph. Paragraph. Paragraph. Paragraph. Paragraph. Paragraph. Paragraph. Paragraph. Paragraph. Paragraph.

The purpose. Of this paragraph. Is to apologize. For its gratuitous use. Of. Sentence fragments. Sorry.

The purpose of this sentence is to apologize for the pointless and silly adolescent games indulged in by the preceding two paragraphs, and to express regret on the part of us, the more mature sentences, that the entire tone of this story is such that it can't seem to communicate a simple, albeit sordid, scenario.

This sentence wishes to apologize for all the needless apologies found in this story (this one included), which, although placed here ostensibly for the benefit of the more vexed readers, merely delay in a maddeningly recursive way the continuation of the by-now nearly forgotten story line.

This sentence is bursting at the punctuation marks with news of the dire import of self-reference as applied to sentences, a practice that could prove to be a veritable Pandora's box of potential havoc, for if a sentence can refer or allude to itself, why not a lowly subordinate clause, perhaps *this very* clause? Or this sentence fragment? Or three words? Two words? *One*?

Perhaps it is appropriate that this sentence gently and with no trace of condescension remind us that these are indeed difficult and uncertain times and that in general people just aren't nice enough to each other, and perhaps we, whether sentient human beings or sentient sentences, should just *try harder*. I mean, there *is* such a thing as free will, there *has* to be, and this sentence is proof of it! Neither this sentence nor you, the reader, is

Self-Referential Sentences: A Follow-Up

completely helpless in the face of all the pitiless forces at work in the universe. We should stand our ground, face facts, take Mother Nature by the throat and just *try harder*. By the throat. Harder. Harder, harder.

Sorry.

This is the title of this story, which is also found several times in the story itself.

This is the last sentence of the story. This is the last sentence of the story. This is the last sentence of the story. This is.

Sorry.

Post Scriptum.

As you can see, there is a vast amount of self-referential material out there in the world. To pick only the very best is a monumental task, and certainly a highly subjective one. I would like to include here some of the things that I had to omit from the second self-reference column with great regret, as well as some of the things that were sent in later, in response to it.

First, though, I would like to mention an amusing incident. When Lee Sallows' self-documenting sentence was to be printed in the narrow columns of *Scientific American*, nobody remembered to tell the typesetters not to break any unhyphenated words. As luck would have it, two such breaks were introduced, yielding two spurious hyphens, thus spoiling (in a superficial sense) the accuracy of his construction. How subtly one can get snagged when self-reference is concerned!

Paul Velleman sent me a copy of the front page of the *Ithaca Journal*, dated January 26, 1981, with a banner headline saying "Ex-hostages enjoy their privacy". He wrote, "I think it may be self-referent (and self-contradictory) in a different way than your other examples because the medium, positioning, and size of its printing are all necessary components of the contradiction." When I looked at the page, I simply saw nothing self-referential. I thought maybe I was supposed to look at the flip side, for some reason, but that had even less of interest. So I looked back at the headline, and suddenly it hit me: How can people "enjoy privacy" when it's being blared across the front page of newspapers across the nation?

Along the same lines, soon thereafter I came across a photograph of Lady Di in tears, and in the caption her tears were explained this way: "Lady Di was apparently overcome by the strain of the impending royal wedding and having her every move in public watched by thousands. See story on page A20. Details on the royal honeymoon, page A7."

John M. Lankford wrote me a long letter from Japan on self-reference, remarkably similar in some ways to the one from Flash qFiasco. The most memorable paragraph in his letter was the following one:

Here in Japan, twice a week, I teach a little class in English for a group of university students—mainly graduate students in the sciences. I spent one class hour taking some of your sentences from the *Scientific American* article, writing them on the blackboard, and asking the students what they meant. The students had a fairly good command of written English, but they were poor in their command of idiom, quick verbal response, and, for want of a better term, “humor of the abstract”. As I suspected, many of the sentences—perhaps the most interesting of them—die when ripped from their cultural context. I had quite a bit of difficulty getting across the idea that the pronoun “I” could refer to the sentence as well as to the writer of the sentence. Pronouns cause a lot of trouble in Japan. For example, when I ask someone, “Am I wearing a blue jacket?”, they might frequently reply, “Yes, I am wearing a blue jacket.” This confusion is easy in Japanese due to the relative lack of pronouns in ordinary speech. Of course you can imagine the extra layers of incomprehension that would arise in reading your sentences if the boundaries between “you” and “I” were rather vague.

On a visit to Gettysburg, I read Abraham Lincoln’s Gettysburg address, and for the first time its curious self-reference struck me: “The world will little note nor long remember what we say here.” Lincoln had no way of knowing at the time, but this would turn out to be an extremely false sentence (if it is permissible to speak of *degrees* of falsity). In fact, that sentence itself is a very memorable one. While we’re on presidential self-reference, listen to this self-descriptive remark by former President Ford: “I am the first to admit that I am no great orator or no person that got where I have gotten by any William Jennings Bryan technique.” I guess that where Lincoln’s sentence was extremely false, Ford’s is extremely true. Here is a final self-referential sentence along presidential lines:

If John F. Kennedy were reading this sentence, Lee Harvey Oswald would have missed.

* * *

One of the best self-answering questions came up naturally in the course of a very brief telephone call I made to a restaurant one evening. It went this way: “May I help you?” to which I answered, “You’ve already helped me—by telling me that you’re open today. Thank you. Bye!” And here’s a “self-deferential” sentence by Don Byrd: “I am not as witty as my author.”

I received this anonymous letter in the mail: “I received this anonymous letter in the mail so I can’t credit the author.”—so I can’t credit the author. I also received a request from someone living in Calgary, Alberta, whose name I forget (but if he’s reading this, he’ll know who he is) who wrote “This is my feeble way of attempting to get my name into print.” I hope this satisfies him.

And now a few miscellaneous examples by me, culled from a second wild binge of self-referential sentence-writing I engaged in not long ago. The first three involve translation issues.

Self-Referential Sentences: A Follow-Up

One me has translated at the foot of the letter of the French.

Would not be anomalous if were in Italian.

When one this sentence into the German to translate wanted, would one the fact exploit, that the word order and the punctuation already with the German conventions agree.

How come *this* noun phrase doesn't denote the same thing as *this* noun phrase does?

Every last word in this sentence is a grotesque misspelling of "towmatow".

I don't care *who* wrote this sentence—whoever he is, he's a damn sexist!

This analogy is like lifting yourself by your own bootstraps.

Although this sentence begins with the word "because", it is false.

Despite the fact that it opens like a two-pronged pitchfork—or rather, because of it—this sentence resembles a double-edged sword.

This line from Shakespeare has delusions of grandeur.

If writers were bakers, this sentence would be exactly a dozen words long.

If this sentence had been on the previous page, this very moment would have occurred approximately 60 seconds ago.

This sentence is helping to increase the likelihood of nuclear war by distracting you from the more serious concerns of the world and beguiling you with the trivial joys of self-reference.

This sentence is helping to decrease the likelihood of nuclear war by chiding you for indulging in the trivial joys of self-reference and reminding you of the more serious concerns of the world.

We *mention* "our gigantic nuclear arsenal" in order not to *use* it.

The whole point of this sentence is to make clear what the whole point of this sentence is.

This last one's bizarre circularity reminds me of the number P that I invented a couple of years ago. P is, for each individual, the number of

minutes per month that that person spends thinking about the number P . For me, the value of P seems to average out at about 2. I certainly wouldn't want it to go much above that! I find it crosses my mind most often when I'm shaving.

* * *

Dr. J. K. Aronson from Oxford, England, sent in some of the most marvelous discoveries. Here is one of his best:

'T' is the first, fourth, eleventh, sixteenth, twenty-fourth, twenty-ninth, thirty-third, . . .

The sentence never ends, of course. He also submitted a wonderful complementary pair that faked me out beautifully. His challenge to you is: Try deciphering the first before you read the second.

I eee oai o ooa a e ooi eee o oe.

This sentence contains a vowel and the preceding sentence contains.

One that reminds me somewhat of Aronson's last sentence above is the following spoof on the ads that I believe you can still find in the New York subway, after all these years:

f y cn rd ths, itn tyg h myxbl cd.

By a remarkable coincidence, the remainder of Carl Bender's sentence "The rest of this sentence is written in Thailand, on" was discovered in, of all places, Bangkok, Thailand, by Gregory Bell, who lives there. He has luckily provided me with a perfect copy of it, so for all those who were dying of suspense, it is shown in Figure 2-3.

One evening during a bad electrical storm, I got the following message on the computer from Marsha Meredith:

I jion't be able to work at all tonight blicause of the w&atherBr/ Iji'm getting too many bad characters (as you can see). Ioo baw3d—I get spurious characters]i all over]ithe place—talk totrrRBow,lF7U Marsha.

FIGURE 2-3. The conclusion of Carl Bender's sentence fragment ("The rest of this sentence is written in Thailand, on"), discovered by Gregory Bell on a scrap of paper in Bangkok, Thailand. Translated, it says: "this sheet of paper and is in Thai".

'๕
กระดาษแผ่นนี้และเขียนเป็นภาษาไทย

I wish she had had the patience to type more carefully, so that I could have understood what her problem was.

The sentences having to do with identity in counterfactual worlds, such as Dan Krimm's and its alter egos, reminded me of a blurb by E. O. Wilson I read recently on Lewis Thomas' latest book: "If Montaigne had possessed a deep knowledge of twentieth-century biology, he would have been Lewis Thomas." Ah me, the fluttering elf of self! And Banesh Hoffmann, in *Relativity and Its Roots*, has written: "How safe we would be from death by nuclear bomb had we been born in the time of Shakespeare." Sure, except we'd also all be long dead—unless, of course, the 24th-century doctors who will invent immortality pills had *also* been born in Shakespeare's time!

The following self-referential poem just came to me one day:

Twice five syllables,
Plus seven, can't say much—but . . .
That's haiku for you.

The genre of self-referential poetry—including haiku—was actually quite popular. Tom McDonald submitted this non-limerick:

A very sad poet was Jenny—
Her limericks weren't worth a penny.
In technique they were sound,
Yet somehow she found
Whenever she tried to write any,
That she always wrote one line too many!

Several people sent in complex poems of various sorts, and mentioned books of them, such as John Hollander's *Rhyme's Reason*, a collection of poems describing their own forms.

* * *

Self-referential book titles are enjoying a mild vogue these days. Raymond Smullyan was one of the most enthusiastic explorers of the potential of this idea, using the titles *What Is the Name of This Book?* and *This Book Needs No Title*. Actually, I think *Needs No Title* would have said it more crisply, or maybe just *No Title*. Come to think of it, why not *No*, or even just plain ? (I hope you could tell that those blanks were in *italics*!)

Other self-referential book titles I have collected include these:

Forget all the rules you ever learned about graphic design.

Including the ones in this book.

Steal This Book

Ban This Book

Deduct This Book (How Not to Pay Taxes While Ronald Reagan Is President)

Do You Think Mom Would Like This One?

Dewey Decimal No. 510.46 FC H3

I Never Can Remember What It's Called

The Great American Novel

ISBN 0-943568-01-3

Self-Referential Book Title

The Top Book on the New York Times Bestseller List for the Past Ten Weeks

Don't Go Overseas Until You've Read This Book

Soon to Become a Major Motion Picture

By Me, William Shakespeare (by Robert Payne)

That Book with the Red Cover in Your Window

Reviews of This Book

Oh, by the way, some of these are fake, others are real. For example, the last one, *Reviews of This Book*, is just a fantasy of mine. I would love to see a book consisting of nothing but a collection of reviews of it that appeared (after its publication, of course) in major newspapers and magazines. It sounds paradoxical, but it could be arranged with a lot of planning and hard work. First, a group of major journals would all have to agree to run reviews of the book by the various contributors to the book. Then all the reviewers would begin writing. But they would have to mail off their various drafts to all the other reviewers very regularly so that all the reviews could evolve together, and thus eventually reach a stable state of a kind known in physics as a "Hartree-Fock self-consistent solution". Then the book could be published, after which its reviews would come out in their respective journals, as per arrangement. (A little more on this idea is given in the postscript to Chapter 16.)

* * *

I chanced across two books devoted to the subject of indexing books. They are: *A Theory of Indexing* (by Gerald Salton) and *Typescripts, Proofs, and Indexes* (by Judith Butcher). Amazingly, neither one has an index. I also received a curious letter soliciting funds, which began this way: "Dear Friend: In these last months, I've been making a study of the money-raising letter as an art form . . ." I didn't read any further.

Aldo Spinelli, an Italian artist and writer, sent me some of his products. One, a short book called *Loopings*, has pages documenting their own word

and letter counts in various complex ways, and includes at the end a short essay on various ways in which documents can tally themselves up or can mutually tally each other in twisty loops. Another, called *Chisel Book*, documents its own production, beginning with the idea, going through the finding of a publisher, making the layout, designing the cover, printing it, and so on.

Ashleigh Brilliant is the inventor of a vast number of aphorisms he calls "potshots", many of which have become very popular phrases in this country. For some reason, he has a self-imposed limit of seventeen words per potshot. A few typical potshots (all taken from his four books listed in the Bibliography) are:

What would life be, without me?

As long as I have you, I can endure all the troubles you inevitably bring.

Remember me? I'm the one who never made any impression on you.

Why does trouble always come at the wrong time?

Due to circumstances beyond my control, I am master of my fate and captain of my soul.

Although strictly speaking these are not self-referential sentences, they are all admirable examples of how the world constantly tangles with itself in multifarious self-undermining ways, and as such, they definitely belong in this chapter. As a matter of fact, I would like to take this occasion to announce that Ashleigh Brilliant is the 1984 recipient of the last annual Nobaloney Prize for Aphoristic Eloquence. The traditional Nobaloney ceremony, involving the awarding of a \$1,000,000 cash prize two minutes before the recipient's decapitation, has been waived, at Mr. Brilliant's request.

There are other books containing much of interest to the self-reference addict. I would particularly recommend the recent *More on Oxymoron*, by Patrick Hughes, as well as the earlier *Vicious Circles and Infinity*, by Hughes and George Brecht. Also in this category are three thin volumes on Murphy's Law, compiled by Arthur Bloch. Murphy's Law, of course, is the one that says, "If anything can go wrong, it will", although when I first heard of it, it was called the "Fourth Law of Thermodynamics". O'Toole's Commentary on Murphy's Law is: "Murphy was an optimist." Goldberg's Commentary thereupon is: "O'Toole was an optimist." And finally, there is Schnatterly's Summing Up: "If anything *can't* go wrong, it will."

My own law, "Hofstadter's Law", states: "It always takes longer than you think it will take, even if you take into account Hofstadter's Law." Despite being its enunciator, I never seem to be able to take it fully into account in

budgeting my own time. To help me out, therefore, my friend Don Byrd came up with his own law that I have taken to heart:

Byrd's Law:

It always takes longer than you think it will take, even if you take into account Hofstadter's Law.

Unfortunately, Byrd himself seems unable to take this law into account.