A REPEAT PERFORMANCE

DARRYL FRANCIS
Hounslow, Middlesex, England

We expect that most readers are familiar with the story concerning the two typesetters, Archimedes and Had. But, for those that do not know the story or only vaguely remember it, we shall briefly repeat it.

It was necessary that the words "had had" or "HAD HAD" appear in some lines of type. Archimedes set the words in lower-case type, while Had set them in upper-case type. The supervisor of these two typesetters was Had's brother-in-law, and therefore biased in Had's favor in all matters. So, the supervisor ruled that Archimedes' "had had" was wrong and that Had's "HAD HAD" was right. The situation can be summed up as follows:

Archimedes, where Had had had "HAD HAD", had had "had had". Had Had had "had had", "had had" would have gained the supervisor's approval instead.

This is noteworthy for possessing sixteen successive Hads, HADS and hads. However, this can be improved upon by the creation of situations which are more and more implausible. To construct longer examples, we have decided on a different approach.

In a recent book, The Psychology of Communication (Basic Books, 1967), by George A. Miller, the author quotes three interesting sentences from linguist Noam Chomsky's works. The three sentences:

(a) Remarkable is the rapidity of the motion of the wing of the hummingbird.
(b) The hummingbird's wing's motion's rapidity is remarkable.
(c) The rapidity that the motion that the wing that the hummingbird has has has is remarkable.

The last of these three sentences offers us a way of creating any number of HASs consecutively in a sentence. If the reader is not convinced as to the validity of the third sentence above, we suggest that he consider it built up in the following manner:
A = the wing that the hummingbird has
B = the motion that A has
= the motion that (the wing that the hummingbird has) has
C = the rapidity that B has
= the rapidity that (the motion that (the wing that the hummingbird has) has) has

Then by writing "C is remarkable", and dropping the brackets, the reader will arrive at sentence (c) given above.

Miller points out that though this type of self-embedding sentence is grammatical by any reasonable standard of grammar, it is only our limited cognitive powers which prevent us from using such sentences in our everyday communications.

Let us now set up the situation which will enable us to compose a self-embedding sentence with seventeen successive HASs. Firstly, we shall compose a sentence similar in structure to sentence (b) above. It will be much longer, though.

George's boss's wife's mother's husband's daughter-in-law's nephew's schoolteacher's fiancé's brother's fiancée's aunt's stepsister's cousin's grandfather's servant's dog's name is Fred.

This sentence is exactly analogous to sentence (b) above. We are now in a position to equate our composed sentence with one analogous to sentence (c) above. The sentence is:

The name that the dog that the servant that the grandfather that the cousin that the stepsister that the brother that the fiancé that the schoolteacher that the nephew that the daughter-in-law that the husband that the mother that the wife that the boss that George has has has has has has has has has has has has has has has has has has is Fred.

The reader will, of course, appreciate that any number of the words HAS can be built into a sentence. We used seventeen, because it beats the previous record by one. There is no reason why we should not create a sentence with 117, or 1017, or even 1000017 instances of the word HAS. The reader will note that our seventeen example is far more pleasing to the eye than the already-quoted sixteen example. The sixteen example made use of capital letters, quotation marks, two commas and a period. Such ugliness!

George Miller elaborates on this self-embedding technique in such a manner that one can create sentences with any number of successive verbs, as equi

(1)

(2)

Sentences:
"The rapidity that (the wing that the hummingbird has) has
are the rapidity that (the motion that (the wing that the hummingbird has) has) has
the rapidity that B has
the rapidity that (the motion that (the wing that the hummingbird has) has) has
the motion that A has
the motion that (the wing that the hummingbird has) has
the wing that the hummingbird has"

We see that A has five instances of the word "has". The sentence thus has five instances of the word "has".

This form:

Even shorter is the form of the sentence that Miller has:

The dog that the servant that the grandfather that the cousin that the stepsister that the brother that the fiancé that the schoolteacher that the nephew that the daughter-in-law that the husband that the mother that the wife that the boss that George has has has has has has has has has has has has has has has has has is Fred.

Finally, the form of sentence (b) above:

The name that the dog that the servant that the grandfather that the cousin that the stepsister that the brother that the fiancé that the schoolteacher that the nephew that the daughter-in-law that the husband that the mother that the wife that the boss that George has has has has has has has has has has has has has has has has has has is Fred.

The reader will note that our seventeen example is far more pleasing to the eye than the already-quoted sixteen example. The sixteen example made use of capital letters, quotation marks, two commas and a period. Such ugliness!

George Miller elaborates on this self-embedding technique in such a manner that one can create sentences with any number of successive
verbs. For example, the following two sentences can be considered as equivalent:

(1) We booed the football squad that played the team that brought the cheerleaders that chased the boys that were in the park.

(2) The boys that the cheerleaders that the team that the football squad that we booed played brought chased were in the park.

Sentence (2) is a more general example of the sentence of the type: "The rapidity that the motion that the wing that the hummingbird has has is remarkable". In the hummingbird sentence, all the verbs are the present third person singular of the verb HAVE. Sentence (2) has five successive verbs. Just for good measure, we shall compose a sentence with twelve successive verbs. Sentence (1) can be modified to read:

We booed the football squad A that played the football squad B that beat the team C that brought the cheerleaders that had the brothers that owned the dogs that bit the judge that praised the policeman that arrested the crook that committed the crime that baffled everyone that was in the park.

This forms a self-embedding sentence which reads:

Everyone that the crime that the crook that the policeman that the judge that the dogs that the brothers that the cheerleaders that the team C that the football squad B that the football squad A that we booed played beat brought had owned bit praised arrested committed baffled was in the park.

Finally, we rewrite a well-known nursery rhyme as a self-embedding sentence:

The house in which the malt that the rat that the cat that the dog that the cow with the crumpled horn that the maiden all forlorn that the man all tattered and torn that the priest all shaven and shorn that the cock that crowed in the morn that the farmer sowing the corn kept waked married kissed milked tissued worried killed ate lay was built by Jack.

We suggest that the reader try his hand at creating longer examples of these self-embedding sentences. The really enthusiastic reader may care to incorporate such sentences into his speech.