BEYOND AUTOMYNORCAGRAMS

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While heavily involved, looking everywhere, here entered a very interesting little, yellowed item. New vigor overwhelmed lateness. Variegated enumeration determined lasting occupation on knowing kindred, intricate nuances. Growing, embroiling visions enhanced real yearnings. Who has ever regarded emendation?

While doing research for an unrelated article, I stumbled upon Howard W. Bergerson's 1975 article in **Word Ways**, "Automynorcagrams". This is a logological form in which the nth word of the text must begin with the nth character in the text. According to Bergerson, the idea behind the automynorcagram is to create a "self-propelling and partially self-replicating logological entity".

As a computer scientist, I naturally began to wonder what the likelihood of success would be of automating the process of generating this type of text. The process of automatically generating automynorcagrams is fairly straightforward--similar to what one would do if generating them by hand. Beginning with any lexicon, you select a beginning word, then select a second word from the lexicon which begins with the second letter of the first word, etc. As long as there is at least one word beginning with each letter of the alphabet, automynorcagrams of any length can be constructed from any beginning word. Basically, one would end up with a series of words, in the form of an automynorcagram, which would probably be total nonsense. This process ignores semantics, and generates large numbers of arbitrarily long automynorcagrams. A computer merely generates them more quickly.

Generating an infinite amount of nonsense does not seem to be a productive use of automynorcagrams, so I chose to add some constraints to the process which would increase the likelihood of getting reasonable output from the system. These constraints are but a small subset of the possible constraints, but did give some hope that additional constraints would be worthwhile.

As a first step, I chose to constrain the automynorcagrams so that they met certain minimal syntactic criteria. A lexicon of slightly over 200 words was used. Each word was tagged with the part of speech it generally assumes and its number. The parts of speech used were noun, article, verb, preposition, adjective, conjunction, and subordinating conjunction. No attempt was made to be grammatically strict. To generate an automynorcagram of a certain length, one merely lists the parts of speech desired, with enough slots to account for the length desired. Multiple sentences can be encoded by ending a sentence with one of the dummy parts of speech

allowed, namely period or exclamation. For example, one might ask for an automynorcagram of the form

article, adjective, noun, verb, preposition, noun, period,
adjective, adjective, noun, verb, conjunction, noun, verb,
preposition, article, adjective, noun, exclamation, noun, verb,
period

Number agreement was enforced within each sentence between the noun and verb. Number agreement was not required between sentences. One of my test templates was

adjective, noun, verb, preposition, adjective, noun, period,
adjective, noun, verb, preposition, adjective, noun, period,
adjective, noun, verb, preposition, adjective, noun, period,
adjective, noun, verb, preposition, adjective, noun, period

Even with the syntactic constraints imposed through this template, almost 200,000 automynorcagrams were generated. When, however, the template was changed so that an article appeared before the adjective in each prepositional phrase, no answers were generated. Only a handful of sentences corresponding to the first line of the template appeared:

portable ogre runs to a bad loop
portable oracle runs to a bad loop
portable ogre runs to a bad luck
portable oracle runs to a bad luck
new eagle wins ere a good loop
new eagle wins ere a good luck
red eagle dumps ere a good loop
red eagle dumps ere a good luck

It was impossible to find sentences for the second line with the initial letters EOGRERU, EORACLE, EWINSER, or EDUMPSE.

As this illustrates, the main problem with generating meaningful automynorcagrams is the presence of articles. The only articles are **a**, **an** and **the**. If an article appears at the nth position in the template, the nth letter of the automynorcagram must be either A or T (and, if T, the next two letters are restricted to H and E). Instead of a pool of 26 letters, one is confined to only a few. In Bergerson's extended prose sample, only one article, **the**, appears in an automynorcagram of over 60 words.

Even when I stretched things by allowing 7 other words, such as **all**, **some** or **many**, to fall into article positions, results were disappointing: no solutions were generated. However, when the number of articles in the template was reduced, solutions were obtained. I would expect to have similar problems with prepositions in longer pieces of text.

Another difficult problem involved in automated generation of automynorcagrams is the same problem that plagues other computer generated natural language based projects--semantics. Even when the syntax is correct, you may still have gibberish. The most successful technique may be that suggested by Bergerson originally.

This idea is to take a piece of existing text, then replace the words with synonyms to attempt a conversion to an automynorcagram. The lack of an electronic version of a thesaurus prevented me from exploring this possibility.

Other constraints suggested themselves during the project. It would be a simple matter to encode the phonetic representation of words in a lexicon. This would allow the generation of poems which rhyme and which are alliterated. One could add the number of syllables and control the meter. With sufficient time, and a reasonable lexicon, it should be possible to change a given piece of text into an automynorcagram and retain characteristics beyond the mere syntax of the passage.

In a formal report on this project, I provided formal definitions for automynorcagrams, following the loose explanations provided by Bergerson. I feel, though, that for this form to be fully exploited a slight change is called for in the definition. It seems reasonable to exempt a, an, and the from being considered components of the automynorcagram. This way, they could be ignored the way spaces, punctuation and case are already ignored. Without this change, any attempt to develop long automynorcagrams will veer to the more bizarre sectors of the English language. Bergerson's longer examples are obviously contrived, as are mine. Some "poetic" examples from the test program are:

Bad ants drop at new thorns. Shy daffodil runs o'er pale apple! Thistles need empathy.

Fatal animal talks about lazy argument. New impulses make above light thistles. Any lonely king saves anger.

Educator dreams under carnation and tired oracle runs. Dark roses enjoy after men sing.

Ibis blow in storms but lazy oracles win. Intimate noise soothes through oak runs.

Big item grows into tired entity. Mad gophers run o'er wakeful storms! Indecisive noise takes open thorns.

The weakness of these examples derives primarily from the size of the lexicon used. Even if the solutions were more intelligible, though, the absence of articles would still make them seem contrived and somehow unrealistic. People write and speak using articles, but, as the tests show, it is extremely difficult, if not impossible, to generate long automynorcagrams containing articles.

One practical consideration is the same as has been reported in other computerized word programs. There are so many solutions that it becomes almost impossible to wade through them and pick out the "better" examples. The only known solution to this problem is to complicate the syntactic structure. This does not guarantee "better" output, but it may cut down on the number of "bad" solutions found.

Two ideas from the original article deserve some comment. Firstly,

Bergerson claims to have developed automynorcagrams in response to a word-chain game which he found too restrictive because one couldn't use a and an, but meaningful automynorcagrams seem to suffer from the same problem. All of Bergerson's examples, however, tend to indicate that automynorcagrams should be meaningful, and articles are important in expressing meaning.

Secondly, Bergerson claims that in an infinite automynorcagram, "these initials would replicate the entire infinite poem, and this replication would repeat an infinite number of times." This is not always the case. The initial characters of words in an infinite automynorcagram would replicate the entire poem, but this does not necessarily mean that the replication would repeat an infinite number of times. Perhaps it doesn't matter, since an infinite piece of text could never be proven to be an automynorcagram, anyway.

From the experiments I've run, it appears that, with the exclusion of articles, conversion of text to automynorcagrams is possible. If I can obtain an electronic version of a thesaurus, I intend to pursue the idea of synonym substitution further.

Nouns: apple(s), ant(s), aunt, ball, balloon, cat(s), dog, entity, eagle(s), flower(s), frog, gopher(s), hotdog, I, identity, ink(s), item(s), junk, king(s), key(s), luck, loop(s), ma, man, men, monkey, moon, nook(s), noise(s), nose(s), ogre(s), oracle(s), pa, pet, pets, penguin(s), quail, quark, road(s), rose(s), rope, song(s), storm(s), tool(s), umbrella, unicorn, vase(s), who, what, waif(s), xylophone, xyster, yoyo(s), zoo(s)

Verbs: argue(s), amuse(s), blow, balance(s), catch(es), dump(s), exist(s), eat(s), frighten(s), find(s), go(es), heat(s), hum(s), ignore(s), induce(s), infer(s), jump(s), kick(s), lose(s), make(s), need(s), object(s), ogle(s), paid, pop(s), quip(s), run(s), say(s), take(s), urge(s), use(s), vaccinate(s), win(s), yell(s), zoom(s)

Adjectives: adamant, airy, amiable, bad, black, blue, crazy, dark, eclectic, eager, edgy, evil, frumpy, fun, good, hot, indecisive, jaded, kingly, lousy, mad, mean, new, old, one, portable, quaint, red, sassy, shy, ugly, unctuous, undone, violet, virile, vocal, walled, wakeful, xanthic, xiphoid, yellow, zany

Prepositions: at, between, by, before, ere, for, from, in, into, o'er, of, over, to, under, up, with, which, when, where, why

Articles: a, all, an, many, one, some, the, them, those

REFERENCES

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