ON CONVERTING NUMBERS INTO WORDS

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I might tary a longe time in declaryng the nature of diuerse Schemes, whiche are woordes or sentencies altered contrarie to the vulgar custome of our speache.
--Thomas Wilson, The Arte of Rhetorique, 1553

Logologists have labored long to devise schemes for encoding words in numbers, and vice versa. In the May 1993 issue of **Word Ways**, Lee Sallows offered a scheme based on the base 27 number system. In Sallows's scheme, the alphabet's 26 letters become the 26 nonzero digits required for a base 27 number system, and another symbol, the underscore, represents zero. Words are transformed into other words by translating them to integers according to the code, then operating on the integers mathematically, and finally back-translating the computed integers into sequences of letters. If the back-translated letter-sequence is a word, Sallows calls the integer that generated it a **wint** (contraction of **word integer**).

Unfortunately, not all letter-sequences generated from integers are words in Sallows's scheme: wints are scarce. Although Sallows's scheme is a tour de force of logic and rigor, it is disappointing that so few integers can be translated to words. The great world of numbers is practically devoid of semantic content in Sallows's system. Sallows computes, for example, that less than one per cent of the sums of all possible pairs of 4-letter words are wints.

Because of the scarcity of wints, the game plays slowly. You can confirm this, for example, by trying to find wints that satisfy Pythagoras's theorem, $a^2 + b^2 = c^2$. Sallows offers only one set: $[9*27^0]^2 + [1*27^1 + 13*27^0]^2 = [1*27^1 + 14*27^0]^2$, which translates to $I^2 + AM^2 = AN^2$.

Hunting for wints is a tedious job best performed by a computer with access to a dictionary-sized word list. Even then the yields are low. It's not much sport hunting with a computer. Sallows's new gematria seems to leave little to the imagination for recreational logologists. Furthermore, it is not satisfying that every number cannot generate a word.

Stimulated by Sallows's article, I sought a wint-rich scheme for converting numbers to words. To that end I adapted a mnemonic system I learned as a schoolboy for memorizing the grocery lists my mother gave me. (I cannot remember the original source of this system; conceivably it is still widely used by mnemonicists.) Primarily a method for converting integers into words and phrases, it works as well in reverse. Each of the ten digits in the decimal number system is assigned a single consonant or a few related consonants (e.g., 9 is assigned p and b, which is easily remembered because 9 and p are near-mirror images, and because b, like p, is a labial stop). Vowels, including **y**, have no numerical equivalent. I assign no value to **y** whether it functions as a vowel or not, and no value to **h** or **w**, which are often silent (**hour, answer**). These three letters can be used freely, as leading, trailing or internal letters, in generating words from integers.

In this system, almost every integer is a wint. For example, knowing just the key for 9 (p or b), one can generate words (compounds, phrases, or sentences) for each of the following integers:

9 = pie
99 = peep
999 = puppy
9999 = beep-beep
99999 = poopy puppy
999999 = peppy puppy
9999999 = happy hippy baby boy
99999999 = bop peppy pappy
999999999 = bye-bye, poopy baby bobby

The complete assignment of digits to consonants is based on a combination of phonetic and orthographic links. The following alphabetic letters, digraphs and trigraphs are assigned to the decimal digits, 0 through 9:

0 = z,s - z for zero; note that s and z are similar sounds (easy breezy); include soft c [piece = 90]
1 = t,d - t and d are dental companions, each having one downstroke; include the dental spirant th, as in thin
2 = n - n has two downstrokes
3 = m - m has three downstrokes
4 = r - r sounds like four, a four-letter word ending in r
5 = l - L = 50 in Roman numerals
6 = j,ch - j is backward 6; include j sound-alikes g and dg when pronounced like j [gene = 62, judge = 66]; ch [church = 646], and by extension sh, sch [shut = 61, schlep = 659], and tch [hutch = 6]
7 = k,q - an uppercase cursive K is a 7 with wings on its back; include the k sound, as in hard c [cake = 77] and ck [back = 97], and in hard ch [ache = 7]; also the kw or q sound [quick = 77]; also hard g [game = 73]; also x [extra = 714]
8 = f,v - a lowercase cursive f looks like 8, and v sounds like f [love rhymes with of]; also include the consonantal digraphs sounded as f: ph [phone] and gh [cough]
9 = p,b - p is backward 9; b is another labial stop

All 18 consonants of the alphabet (bcdfgjklmnpqrstvxz) are thus represented, and the eight "vowels" (aeiouywh) are fillers. The bidirectional key is easily remembered by the orthographic and phonetic tricks described above.

This scheme, like Sallows's, allows every text to be translated into numbers, a number for every word. The preceding sentence translates to 10 073, 57 0550'0, 550 84 171 1 9 1420511 21 23940, 2394 84 84 41. That requires no imagination. But it does have the same potential of Sallows's scheme to allow mathematical manipulations of words and reconversion of the results back into text. The advantage is that solutions are to be expected, and finding them does not take a computer program. Thus, taking an arbitrary whole number solution of Pythagoras's theorem, $6^2 + 8^2 = 10^2$, one readily finds the satisfying $JAW^2 + OAF^2 = EATS^2$. Some others:

$66^2 + 112^2 = 130^2$: $JUDGE^2 + ADD\text{-}ON^2 = TOMES^2$
$120^2 + 350^2 = 370^2$: $DANCE^2 + MALES^2 = MIXES^2$
$360^2 + 770^2 = 850^2$: $MASHES^2 + CAKES^2 = FLEAS^2$

Consider

HOT x COLD = KILT : 1 x 751 = 751
WARM x COOL = WOMEN-ONLY (or MEN-ONLY) : 43 x 75 = 3225
ICE x STEAM = HAZE : 0 x 013 = 0
WET x DRY = TEAR : 1 x 14 = 14
HARD x SOFT = NAIL-HEADED : 31 x 81 = 2511
BLACK x WHITE = PLECKED (spotted, in OED) : 957 x 1 = 957

Note that more than one solution is often possible:

'Tis true that 2 + 2 is always 4
But ON plus IN is sometimes OR
At other times it's OAR or ORE
Or HOAR or WAR but never MORE.

Like null vowels, redundancy in the code serves to ensure semantic life for nearly every integer.

The real fun is in the translation of numbers to words. That is where the imagination comes in, and the art emerges: the images, the poetry...

1 = tea
12 = tiny
123 = adenoma (benign tumor of a gland, in OED)
1234 = tawny-moor (brown-skinned foreign native, in OED)
12345 = dynamo rule
123456 = eat enemy relish
1234567 = wait no more latch-key
12345678 = to nemoral (wood-frequenting, in OED) Chekhov

There is poetry in numbers: social security numbers, equipment serial numbers, license numbers, birthdates, times, ISBN numbers, physical constants, etc. The numbers need not be integers, only treatable as such (e.g., decimals [pi = 3.1415... = my.turtle...], dates [01/01/93 = 010193 = sweetest poem]). Consider the birthdate 7/11/38. Formatted thus, it translates to "okay, detumefy!" (On looking back one last time, these may have been the newborn's first brave thoughts after leaving its mother's swollen womb.)

A practical use for this scheme is in memorizing telephone numbers. For example, encode 485-0539 as rfl-slmp, and add vowels to get "rifle slump". Associate a fanciful image of a slumping rifle strapped to the shoulder of the person who has that telephone number: a mental cartoon captioned "rifle slump". To rehearse the association, I may refer to my friend as "rifle slump" in conversation, and I may address yfriend as "rifle slump" in greeting, as if it were a nickname. Soon it becomes one. Since I know the code, I never have to look up my friend's telephone number: rifle slump = 4850539.

Thus, a practical task is made into a game. The game is to generate the words: the images, the cartoon captions, the picture titles.

Using this scheme, words or word-combinations can be found for almost any integer of up to considerable size. Indeed, there is likely to be several possible translations for a given integer. Thus, 4850539, the telephone number discussed above, can also be translated "reef eels limp". Once you create an image of your friend walking on the reef in the company of limping eels, and you title that image "reef eels limp" in your mind like a Far Side cartoon, how can you ever forget it? Forget your own artistic creation and that catchy little phrase? Not likely. Especially if you rehearse it whenever the occasion arises.

Here are a few more telephone numbers from my personal directory. None are fictitious. Each has its own cartoon in my mind.

282-0788 uneven skiff (a favorite Chinese restaurant)
724-8411 achin' river tot (a hospital)
476-9000 workshop essays (my workplace)
438-5547 remove all work (a software company)
292-7171 no pink takeout (a florist)
441-6670 reread chichi hacks (a bookstore)
888-4880 vivifier of views (another software company)
312-9066 emotion whips, ouch-ouch (another bookstore)

Area codes are handled separately: San Francisco Bay Area 415 = radial, Manhattan 212 = Indian, Dallas 214 = nadir, Chicago 312 = amyotonia. Again, each is stored as an image.

In using this system to generate words, the source of integers is not important. This system allows words to be generated from linear sequences of tokens from any sign-set whose member species can be mapped to the decimal digits. Linguistic messages are hiding everywhere.