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~~[illegible]~~ NJA Sloane,

No doubt somebody has by now suggested to you that

although your Handbook

of Integer Sequences is by itself useful, it now

needs to be supplemented in the following manner.

You can "index" your handbook as follows

Beginning with a number such as 100, you

list each successive number, up to, say, 10,000

100 pp X sequence # Y ; pp a sequence # b
101 pp j sequence # K
102 etc etc
103
104

—

—

While listing each such number you might as well express it as a product of its prime factors

$100 = (2^2)5^2$
$101 =$ a prime
$102 = (2)3(17)$
etc etc

In some large central computer we should gradually build up a storage of all of the many properties commonly known to be possessed by, say, each number in the range from

17 to 65537 , $17 \leq x \leq 65537$

The range $0 \leq a \leq 16$ is simply too dense with "properties"; and should be the object of a special study, with results stored in a separate computer storage system,

Probably it will take 10 years to index the numbers in range x, $17 \leq x \leq 65537$

but the indexing should proceed in such a way as to reflect, say, the 1980 version of your Handbook of Integer Sequences. Let us say that in 1980 your Handbook will list

$y = 65{,}537$ sequences, numbered from 1 to 65537

The index to your 1980 Handbook, published in 1988, will list many of the important properties of the numbers in the range $w \leq x \leq y$

$w = 17$, $y = 65537$

The index, for convenience, will include page numbers; but should also include sequence numbers

Instead of numbering your sequences from

1 to 65537

you may wish to number them

1000, 2000, 3000, — 65537000, in the 1980 edition,

because this will allow in the future for 1000 related sequences to be inserted into the list, after 1980, at any spot on the 1980 list.

Let me give an example of why the index I propose is both necessary and useful. I have had trouble finding any sequence which includes the number $1651 = (13)127$

But to me this number is important.

Advanced crystallographers have used in the past a classification of 122 molecular groups plus 1651 atomic space groups

Looking now at your sequence #617

the essence of which is

0, 2, 6, 12, 24, 40, 72, 126, 240

272 is not a proper member of that sequence

Here is a sequence which is simply 1 plus the same numbers

1, 3, 7, 13, 25, 41, 73, 127, 241

These 9 numbers can be combined in pairs to give 36 products of which 28 are non-trivial. The products of type

$m(n)\ m(n+4)$ give

$(1)(25) = 25$
$(3)(41) = 123$
$(7)(73) = 511$
$(13)(127) = 1651$
$(25)(241) = 6025$

So 1651 is important to me in my special work –

Naturally I wish to see if can find the number $1651 = (13)127$ in any other sequences; in sequences in your up to date 1980 edition of your list of sequences etc. etc. — I am sure that there are other numbers which are rarely found in your list of sequences. It is a valid scientific question as to why in range X

$$17 \leq X \leq 65537$$

a number r may seldom or never occur in any of the sequences you've listed etc etc So an index would be a way of studying your "list" of integer sequences. But please realize that your list of integer sequences is also a means of studying the properties of the numbers in a given range $w \leq x \leq y$

As the numbers grow larger the entire "study" process becomes more difficult; but the same principles apply.

Following the example of "Books in Print", you may yet decide to do some clusters of sequences based on subjects, — such as all chemical sequences in one set, all "logic" sequences in another set, physical sequences in another set, The biochemists of DNA, RNA etc etc may soon be ready with sequences of bases, or base pairs, relating to proteins, cells, enzymes, hormones, etc etc. — The sequences for some virii ("viruses") ~~and~~ or for some "phages" seem to be completely known etc etc. Different branches of engineering seem to work with different sets of sequences, etc etc — Each branch of science should use not only your general handbook, with proposed index but also its own special handbook, with a special index; but the general handbook, with index and with a subject index, should incorporate all special lists

7 - The concept of "connectedness" is equivalent to the concept of continuity. Robin Wilson D. Phil., in his recent book <u>An Introduction to the Theory of Graphs</u> gives 11120 as the number of connected (simple) graphs for 8 unlabelled points; whereas your book (1973) gives 11117. I urge you to confer with him to ascertain the correct number.

For 6 unlabelled points, 6 = (3)!, the number of connected posets is 238, and these connected posets are the 238 nonreal unity elements of the Antiassociative Algebra of

Degen 1818
Graves 1844
Cayley 1845
Mathews 1862

$$\pm 1, \underbrace{\pm\sqrt{-1}, \pm j, \pm K}_{\textbf{6}\text{ unlabelled points}} \ldots$$

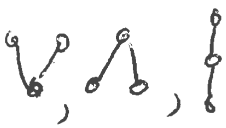
$$PO_c(6) = PO_c\{(3)!\} = 238$$

$\pm 1, +238 = 2 + 238 = 240$ unity elements

$\pm i, \pm j, \pm K$ are 6 unlabelled points which all behave in the same manner; whereas ± 1 behave as the two realunity elements which in fact they are

$2 + 6 = 8$; $2 + 238 = 2 + Po_c(6) = 240$

$Po_c(3) = 3$; so $6 = \{Po_c(3)\}! = (3)!$

$Po_c(3)$:  ; these can be permuted in 6 ways ; and by a rotation of 90 degrees $= \frac{\pi}{2}$ we get 

Cheers, John TANGEN