



SOCIETY OF ACTUARIES

Article From:

# The Actuary

April 1983 – Volume No. 17, Issue No. 4

## THE SECOND NOTATION PROPOSAL FROM DOWN UNDER

by Frank G. Reynolds

(This is Article No. 8 in a series)

In March 1976, a subcommittee of the Institute of Actuaries of Australia and New Zealand put forward another actuarial notation proposal. As its authors said:

"This suggestion has the characteristic of being largely self-explanatory once the basic concept is understood, and reduces to simple expressions for the common cases. Most importantly, it depends on very few arbitrarily defined conventions."

Its principal conventions are these:

1. Reference to a life  $x$  means, "when an event occurs to a life aged  $x$ ".
2. An assurance function consisting of a payment on a given event has the form, "A (payment event)", while an annuity function consisting of a series of payments ending on a given event has the form, "a (end of annuity payments event)".
3. The symbol, #, preceding a number, identifies it as fixed period of years rather than as an age.
4. The signs customarily used to indicate "greater than" and "less than" are used to show the order of events in, e.g., multiple life functions.
5. When used within a function's argument, certain key letters have established meanings, an easily understood example being " $i = 5\%$ ".
6. The word "and" is denoted by the customary & (ampersand).

The following examples illustrate the system:

<u>Present</u>	<u>Proposed</u>
$A_{xy\overline{3} }^{\overline{12}}$	$A(z > (y > x) \& < w)$
$A_{x:\overline{n} }$	$A(x, \#n) \text{ or } A(x, \#n, h=1)$
$A_{\overline{xy}}$	$A(x \& y)$
$n^p \frac{r}{xyz\dots}$	$p(xyz\dots, h=t > \#n)$ where $t+r$ is the total number of lives.
$n^p_x$	$p(x > \#n)$
$n^q_x$	$p(x < \#n)$
$P_x$	$PA(x)$
$P'_{x:\overline{n} }$	$PA(x < \#n)$
$t^V_x$	$V(t, PA=x)$
$t^kV_{x:\overline{n} }$	$V(t, A=x, \#n, P=x, \#k)$ .

Attractive properties of this notation are its close resemblance to the present one, its flexibility, its neat handling of complex stati, and its identifying the nature of the function in the opening letter. On the other hand, it isn't compatible with the computer, partly because it employs both upper- and lower-case letters.

Although not free of drawbacks, this proposal seems the soundest to have emerged.  $\square$

## LETTERS

### Fellowship Syllabus

Sir:

History, even on matters such as the exam restructuring of the 1970s (Linden Cole's article, Jan. issue), can be seen through different eyes.

That 1976 change represented, to us intimately involved, an attempt to replace the prior building block concept—i.e., amassing items of fact in anticipation that the student would use them in a process of inference—by the teaching of actuarial science as a conceptual study from which deductive conclusions could be drawn.

Admittedly, pensions didn't fit easily into this conceptual structure, but our plan was first to put that structure into place, then to produce new study materials that would take care of the pension difficulty.

Later events conspired against this approach. The major one was passage of ERISA in 1974, with its requirement that certain "building block" factual examinations—just the type we'd planned to get rid of—must be passed to become an Enrolled Actuary. This led to further reorganization of the Fellowship parts with the results we see today.

Many are pleased with this because a student can complete the enrollment requirements without taking further exams; others are unhappy because it has distorted a well thought out exam pattern.

The issue here is the distinction between amassing of facts and assimilation of concepts. If the latter rather than the former is what we need, then in some respects the 1981 restructuring was a step backwards.

Charles Barry H. Watson

(Continued on page 7)

### SUMMARY OF NEW SOCIAL SECURITY PROVISIONS

Extraordinary devotion by Robert J. Myers has made available already his latest "Summary of Provisions" that covers the large changes that Congress has just enacted. Request a gratis copy from Mr. Myers at 9610 Wire Avenue, Silver Spring, MD 20901. But don't impose on his generosity by asking for multiple copies—please do your own duplicating.