

FORUM

A Question of Notation

D. H. Sadler

There does not appear to be a standard British notation for the parts of the spherical triangle formed by the pole (P), the zenith (Z) and the observed body (S or X) that is such a familiar feature of astronomical navigation. The main value of such a standard (or generally accepted) notation would be academic and theoretical rather than practical, since most navigators are concerned only with the one system that they use. However, it can be most confusing when comparing different methods to find that (for example) both h and H are used for both hour angle and altitude.

In H.M. Nautical Almanac Office we have in preparation a comprehensive list of formulae for the navigational spherical triangle. This list is being designed to provide every formula in the form, or forms, likely to be required without the need for transposition or substitution of symbols, and without the need for sign conventions. A single consistent notation is obviously essential (there are far too many formulae to contemplate duplication with alternative notations!) and it is desirable that the one chosen should command as wide an acceptance as possible. The Editor has accordingly allowed me space in the Forum to obtain the views of potential users of such a list.

The list has so far been prepared in terms of the mixture of astronomical and navigational notations that has been used in the Office for many years, namely:

latitude	ϕ	parallactic angle	C
declination	δ	azimuth angle	A
local hour angle	h	altitude	H

The defects of this notation are almost too numerous to mention; they include:

- (a) a mixture of Greek and Latin letters;
- (b) a mixture of upper-case and lower-case letters for sides; preferably the letters should be all lower-case for sides and all upper-case for angles;
- (c) a lack of correspondence (except between h and H) between the letters used for opposite sides and angles;
- (d) a lack of accord with both the (general) recommendations of British Standards and of the International Astronomical Union;
- (e) differences with the standard U.S. notation, and with the various notations used in France, Germany and other countries;
- (f) the implication, by the use of ϕ and δ , that latitudes and declinations are positive or negative, rather than north or south; as the formulae will, deliberately, only refer to positive quantities, this can be misleading.

Unfortunately, the various notations used in navigational textbooks and tables seem to be little better, and differ among themselves.

Before reaching a final decision we should like to know whether there are, in general use for either surface or air navigation, established systems of notation

for the six parts of the triangle PZS. Please write direct to me at H.M. Nautical Almanac Office, Royal Greenwich Observatory, Herstmonceux Castle, Hailsham, Sussex.

The adopted notation for the five main parts (the parallactic angle is of lesser navigational importance) should also be capable of logical extension, firstly for co-latitude, polar distance and zenith distance, and secondly for the parts obtained by dividing the triangle into two right-angled (or right-sided) triangles; other auxiliary quantities may also be required. But this is subsidiary to the main problem, which should be decided on the basis of present usages rather than by means of a completely new system.

Bad Language

E. W. Anderson

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The Requirement

The prime object of any learned body is to communicate, either in writing or by word of mouth. Communication demands a common language and hence the Institute of Navigation must be vitally concerned with the language of navigation. Anyone who has read the remarkable navigation dictionary compiled by Alton B. Moody¹ will realize how much confusion exists.

It can be claimed that, on the bridge or on the flight deck, there is no problem. Each transport company, or at least each captain, presumably attaches precise meanings to the terms used in the individual craft. Were this all that navigation involves, terminology would not matter. But navigation today involves scientists, engineers, instructors and lawyers and information needs to be translated from one language into another. Information also needs to be interchanged between the various fields of navigation and these frequently overlap. For example, marine and air navigation overlap in naval aircraft and in hovercraft.

The requirement for a common terminology is particularly important to the man who has to produce navigational equipment and technical data for the operator of the craft. It was for such reasons that Smiths Aviation Division produced their *Air Navigation Terminology*² in 1961, a document which brought to light conflicts in the use of words even in the narrow field of civil air navigation.

Attacking the Problem

The navigator is an individualist who uses words as convenient for his work. Navigation is a science which covers a wide field of disciplines and each discipline has its own terminology. Small wonder that the resulting mixture of idiom and scientific jargon has led to a hotch-potch of navigation terms. Nevertheless, an examination of the way that sea and air navigators use words shows that, in general, there is an extraordinarily close agreement when the precise use of such