

(q. v.). Cf. LOCAL SIGN, and TEMPORAL SIGN. (C.S.P.)

This division of signs, suggested by C.S.P., may be compared with the more generally recognized classification given under SIGN-MAKING FUNCTION; they serve different purposes, and do not seem to be inconsistent. (J.M.B.)

**Sign** (and **Signature**, in psychology). (1) See SIGN (1), and cf. LOCAL SIGN, TEMPORAL SIGN, SYMBOL, and SYMPTOM.

(2) Used also for the various symbols—written, spoken, &c.—of the LANGUAGE FUNCTION (q. v.), such as vocal sign, gesture sign, graphic sign, &c. (J.M.B.)

**Sign** (logical). Any symbol employed in logical writing. Cf. LOGICAL DIAGRAM, SYMBOL, and see the signs employed in the longer logical articles, e.g. LOGIC, LOGIC (exact), TERM, and SYMBOLIC LOGIC.

In regard to the use of signs for logical aggregation and multiplication, it is recommended that the traditional symbols be adhered to as follows:

(1) For aggregation, the plus sign +: something which is either *a* or *b*.

(2) For multiplication, the form *ab*: something which is at once *a* and *b*. (C.L.F., J.M.B.)

**Signal** (of Deprez): see LABORATORY AND APPARATUS, II (general).

**Significance**: see SIGNIFICS (1, c). **Signification** (and **Application**, in logic): Ger. *Bedeutung*; Fr. *signification*; Ital. *significato*. See CONNOTATION (2), and DENOTATION, and cf. MEANING, SIGNIFICS, and SEMANTICS.

These are substitute terms for what are called by Mill and others connotation and denotation; for (1) the previously well-established use of connote was somewhat warped by Mill and his followers, and (2) these words may be applied to the corresponding properties of propositions as well as terms. The application of a term is the collection of objects which it refers to; of a proposition it is the instances of its holding good. The 'signification' of a term is all the qualities which are indicated by it; of a proposition it is all its different implications.

Great confusion has arisen in logic from failing to distinguish between the different sorts of signification, or connotation, of a term: thus to the question, Are proper names connotative? 'contradictory answers are given by ordinarily clear thinkers as being obviously correct,' for the reason that they have not the same thing in mind under the term connotation. It is necessary to distinguish between

(1) the indispensable signification; (2) the banal signification; (3) the informational signification; and (4) the complete signification. (1) is so much as is contained in whatever may be fixed upon as the definition of the term—all those elements of the meaning in the absence of any one of which the name would not be applied; (2) is what 'goes without saying,' what is known to every one, and (3) is what there is occasion to give utterance to: these of course vary with the different individuals to whom the proposition is given out—that oxygen is exhilarating is informational to the student of chemistry, and banal to the teacher of chemistry (but false to those who are familiar with the latest results of the science); (4) consists of all the valid predicates of the term in question. When I say, 'The one I saw yesterday was John Peter,' the indispensable signification of John Peter is simply an individual object of consciousness (usually a man, though it may be a dog, or a doll) whom it has been agreed to designate by that name; but the banal signification, to one who knows John Peter well, is very extensive.

The same characteristics apply to propositions as well as to terms: thus the complete signification (or implication) of *All x is y* is all its valid consequences, and its complete application (or range) is all those descriptions of circumstances under which it holds good—that is to say, all its sufficient antecedents. (C.L.F., C.S.P.)

A general term denotes whatever there may be which possesses the characters which it signifies; J. S. Mill uses, in place of signifies, the term connotes, a word which he or his father picked up in Ockham. But signify has been in uninterrupted use in this sense since the 12th century, when John of Salisbury spoke of 'quod fere in omnium ore celebre est, aliud scilicet esse appellativa significant, et aliud esse quod nominant. Nominantur singularia; sed universalia significantur.' Nothing can be clearer. There is no known occurrence of connote as early as this. Alexander of Hales (*Summa Theol.*, I. liii) makes *nomen connotans* the equivalent of *appellatio relativa*, and takes the relation itself as the accusative object of *connotare*, speaking of 'creator' as connoting the relation of creator to creature. So Aquinas, *In sentent.*, I. dist. viii. q. 1, Art. 1. Subsequently, because adjectives were looked upon as relative terms, *white* being defined as 'having whiteness,' &c., the adjective was

looked upon as connoting the abstraction, but never unless its supposed relative character was under consideration. Tataretus, for example, who wrote when the usage was fully established, will be found using such phraseology as the following: 'Nulla relativa secundum se habent contrarium, cum non sint qualitates primae, sed solum relativa secundum dici, et hoc secundum esse absolutum et significatum principale eorum et non secundum esse respectivum et connotativum.' Chauvin (1st ed.) says: 'Connotativum illud est cuius significatum non sistit in se, sed necessario ad aliud refertur, vel aliud connotat. V.g. Rex, magister, primus.'

It unfortunately happened, as the above quotations show, that the precise meaning recognized as proper to the word 'signify' at the time of John of Salisbury (a younger contemporary of Abelard) was never strictly observed, either before or since; and, on the contrary, the meaning tended to slip towards that of 'denote.' Yet even now the propriety of John's remark must be recognized.

A number of works were written in the middle ages *De modis significandi*, based upon Priscian (a contemporary of Boethius), who in turn followed Apollonius the bad-tempered, 'grammaticorum princeps,' who lived in the time of Hadrian and Antoninus Pius. Cf. also Thurot, *Notices et Extraits des MSS.*, xxii. Pt. II, and Duns Scotus, *Works*, Lyons ed., i. (C.S.P.)

**Significs**: Ger. *Bedeutungslehre*; Fr. *théorie des significations*; Ital. *teoria delle significazioni* (the foreign equivalents are suggested). (1) Significs implies a careful distinction between (a) sense or SIGNIFICATION (q. v.), (b) meaning or INTENTION (q. v.), and (c) significance or ideal WORTH (q. v.). It will be seen that the reference of the first is mainly verbal (or rather SENSAT, q. v.), of the second volitional, and of the third moral (e.g. we speak of some event 'the significance of which cannot be overrated'; it would be impossible in such a case to substitute the 'sense' or the 'meaning' of such event, without serious loss). Significs treats of the relation of the sign in the widest sense to each of these.

(2) A proposed method of mental training, aiming at the concentration of intellectual activities on that which is implicitly assumed to constitute the primary and ultimate value of every form of study: i.e. what is at present indifferently called its meaning or sense, its import or significance.

Significs affords also a means of calling attention to the backwardness of language in

comparison with other modes of human communication, and to the urgent need of stimulating thought by the creation of a general interest in the logical and practical as well as the aesthetical value of all forms of expression. And it provides a convenient general term under which to work perhaps for an international consensus, and for a natural check upon wilful waste or misuse of the existing resources of language, by bringing to bear upon it a certain deterrent of social and academic 'constraint' (cf. the Editor's Preface, viii).

Significs make practically for the detection of lurking confusion or specious assertion in directions where the discipline of formal logic would help less directly and simply. But it is suggested that this study, so far from superseding or displacing or even distracting attention from the disciplines already recognized, would rather render them more effectual because more vitally significant: more obviously related to ordinary experience and interests. It would also bring out the moral value of a greater respect for the traditions and the future of language, and would in fact, while preparing the ground for an expansion of the limits of articulate expression, tend to create a linguistic conscience which must beneficially react upon thought, thus bringing about gradually and naturally a spontaneous consensus in definition.

Much work is already being done in this direction. Significs as a science would centralize and co-ordinate, interpret, interrelate, and concentrate the efforts to bring out meanings in every form, and in so doing to classify the various applications of the signifying property clearly and distinctly.

*Literature*: A. SIDGWICK, *Distinction and Criticism of Beliefs*; KARL PEARSON, *Grammar of Science*; MAHAFFY, *Modern Babel*, in *Nineteenth Cent.*, November, 1896; EUCKEN, *Gesch. d. philos. Terminologie* (1879); and *Monist*, July, 1896; BRÉAL, *Essai de Sémantique*; JESPERSEN, *Progress in Language*; F. TÖNNIES, *Welby Prize Essay*, *Mind*, January and April, 1899; BACON, HOBBS, and later WATELEY, G. CORNEWALL LEWIS, and J. S. MILL are among those who have discussed the general subject. See also E. MARTINAK, *Psychol. Untersuch. z. Bedeutungslehre* (1901). (V.W., G.F.S., J.M.B.)

**Sign-making Function**: (not in use in the other languages). The selection or construction of certain objects—the signs—in order that by mentally operating with these,