On the Expression of Relations in Medicine: Linguistic Aspects

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1. Introduction

The medical vocabulary has to encapsulate concepts for a variety of levels and applications and the advent of computer processing has highlighted linguistic communication problems, firstly at the level of individual communication and recording of disease and secondly across the artificial boundaries of related disciplines (Anderson, 1968). The increased understanding of basic biological processes, applied in conjunction with developments from other sciences has contributed to the complexity of information and hence language at all levels of application. This, coupled with the extended limits of medicine to embrace the Hippocratic concept of the 'total man', has resulted in a vast terminology relevant to the practice of medicine. Language based data in medicine has its main applications in patient care, medical education, training and research.

1.1 Patient Care

Here medical records have a variety of applications

(i) The systematic recording of disease, its development, diagnosis, treatment and progress.
(ii) As medical decision support.
(iii) As an educational aid.

The information in the medical record reflects the synthesis of information from a variety of sources and, as such, is at the basis of all medical information systems. Here, language standardisation has implications at the following levels:

(i) the interpersonal level - for the unambiguous definition of data of particular significance in group practice for communication between doctors;
(ii) in mechanized systems, for the unambiguous retrieval of relevant information;
(iii) for the collection of statistical data for administrative, medico-legal and planning purposes at local, regional, national and international levels;
(iv) for the collection of aetiological data for prevention and control.

1.2 Education

The aim in medical education is to enable the student to construct a cognitive framework within the bounds of what is known and to illustrate decision making and problem solving. An unambiguous terminology is essential for framework formulation and for the definition of relations between data.

1.3 Research

Research need is highlighted at several levels; the analysis of patient re-
cords, to define research problems and theoretical research based on experimenta-
tion and creative endeavour and its documentation for subsequent storage and re-
reival.

2. **Language Processing**

Language information processing and transfer can be considered from the fol-
lowing vantage points:
1. subject related models;
2. semantic levels;
3. cognitive frameworks.

All three are interrelated both conceptually and by virtue of being language
linked. However, in this paper we shall concentrate on 1 and 2, since 3 relates
to a conceptual level which goes beyond language and reflects a process of abstrac-
tion. Ultimately of course, such abstractions have to be expressed in language
but they are independent of any particular language; (this point would be disputed
by Whorf (1956) who argued that our native language does influence our cognitive
processes). However, with respect to standardised reference languages there is a
danger that excessive rigidity could have a stifling effect on creative thought
and precipitate a stagnant terminology. Here we define reference languages as
structured, controlled vocabularies e.g. classification schemes and thesauri, embra-
cing the terminology of a defined area of discourse.

3. **Models and Reference Languages**

It is now generally agreed that science does not only develop by the accretion
of discoveries or 'truths' about the universe and the nature of life but that the
framework which we impose on the perception of phenomena plays an important role in
their interpretation. In the communication of phenomena we thus have the complex
interaction of perception, model relation and language. The early cultures perceived
a totality of the universe and at the time of Plato the world was conceived as a
vast system of classified and hierarchized sympathies. This approach is reflected
in the divinatory nature of the early divisions of the universe. Thus the Chinese
Yin and Yang is conceptually similar to the war and peace of Heraclean Ionism, and
Emerodes love and strife, the relationship between the two major divisions being
that of complementation. The link between the early and present day classifications
is a tenuous one, since modern nomenclature and classification has been vastly
influenced by Cartesian philosophy and reductionism and subsequent positivism which
sought to establish proof of existence as the ultimate criterion of reality. Thus
modern classifications and reference languages are very much entity orientated with
a proliferation of terminology seeking to identify the ultimate or most specific.

The reductionist method has had a particularly strong impact on nomenclature
in medicine. Firstly this approach decreased the capacity of the classificatory
systems to reflect the dynamic state of interaction and transformation and secondly
resulted in a proliferation of terminology with an accretion of synonyms and eony-