Citations and impacts have been recognised for decades as a feature of central

importance in science studies. They have received even more attention recently with the pervasive practices of institutional assessment, benchmarking, and .excellence.

measurement. Interpretations of citation analyses are subject to many caveats which

have been studied by both sociologists and bibliometricians from a variety of schools. A

major issue is the discrepancy of citation behaviour across fields (PINSKY & NARIN,

1976; MURUGESAN & MORAVCSIK, 1978). In the early eighties various proposals for

field-normalisation of impact figures were suggested, in both the USA and Europe,

making comparisons possible between say, articles in mathematics (a generally lowimpact

field) and in fundamental biology (a generally high impact field). Some

milestones in bibliometric research were reviewed by SCHUBERT & BRAUN (1996).

There is little doubt about the need of normalisation, but the question arises of the

particular level that should be used. A narrow research area? A too small reference set

can be statistically fragile and unstable over time. A large academic discipline? It may

be too heterogeneous, hence inefficient for normalisation. Thus, various pros and cons

of narrow versus large reference sets can be discussed (see the conclusion). To a certain

extent, this corresponds to different perspectives having their own form of legitimacy. If

we want to address the problem in general, we must consider a wide range of extensions

of the reference set used for normalisation. In other words, we have to examine the

sensitivity of normalised impact measures for particular articles as the scale of

observation / normalisation changes. To this end, we need two pieces of information,

first the citation score of individual articles (available in SCI series), and also a

complete (i.e.multi-level) and realistic classification of scientific articles, which will

provide, at various levels of aggregation, the reference set for normalisation or relative

ranking.

There is no .objective. way to uncover the structure of science, which may reflect

institutional habits, mental representations or self-organisation phenomena. Among the

possible ways of offering manageable classifications, there are three classical

approaches. Firstly, the projection of institutional settings, for example traditional

academic disciplines definition; secondly, the information retrieval categories in

databases often based on experts. advice; thirdly, the clusters uncovered by bibliometric

analyses of scientific networks (lexical and citation networks), with many sub-options,

e.g. for citation networks: citation transactions, co-citations, bibliographic coupling.

These broad families of methods are likely to provide different views of the structure of

Science.