CRISIS OR CRITIQUE?*

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In their discussion paper entitled "Little Scientometrics, Big Scientometrics... and Beyond?", Glänzel and Schoepflin signal a crisis in scientometrics. On the basis of this observation, they develop a normative perspective which leads them to call for a "code of ethics." Crisis, however, is one among a range of expected states of affairs for an interdisciplinary specialty which is very much alive: when various research traditions meet, one may expect periods of transition. Kuhn's6 idealotypical division between a paradigm that is strongly structured and allows for puzzle-solving, and a state of crisis during paradigm shifts, is usually illustrated with historical reconstructions of developments in the natural sciences in previous centuries. In our opinion, the sociology of scientific knowledge has shown that the sciences can be analyzed as evolving communication systems ("discourses") which may coincide with disciplinary organization to varying degrees. Since these discourses are reflexive, one might expect them to be sufficiently complex dynamic systems so as to be able to self-organize their criticality (e.g., Ref.2). In this sense, crisis is perhaps a sub-cybernetics of interdisciplinary research. Groups of scientists can be involved in intense, crisis-like debates in otherwise highly structured disciplines.1

Furthermore, institutional rearrangements over the past few decades have interfaced the traditional academy more intensively with organizations in the economy and the political system (e.g., Cozzens et al. 19894). Academic reputation is no longer the single value embodied in organized knowledge production and control systems.10 Newer and more complex university-industry relations have been stabilized.5 The observer is able to focus on the stabilities in the emerging systems, while an alternative perspective might focus, for example, on the fluxes.

Glänzel and Schoepflin's paper focusses on what may have been lost during these (ongoing) transitions. Their contribution is in this sense nostalgic, and it might have been better published in a newsletter, since the normative claims cannot easily be substantiated in empirical terms. For example, although one of us has been in the middle of various scientometric debates (e.g., Ref.8) and the other is studying the history of scientometrics, we are unaware of the many instances of severe misconduct, failing quality-management, etc., to which the authors allude in their paper.

Of course, people always make mistakes, and they use different standards. The crucial question with respect to quality in an interdisciplinary field of science like scientometrics is whether performance is being improved, and whether mechanisms exist (or are under construction) which positively reward improvements. Many of our colleagues perform their research under difficult constraints like shortage of funding. We should particularly appreciate the contributions of colleagues who are under the pressure of commissioned research projects and yet find time and energy to publish scholarly communications.

Contrary to Glänzel and Schoepflin one may wish to accept that scientometrics is a heterogeneous field in which different contributors have to communicate with a variety of audiences, while only some of us are in the position to make academic goals their sole concern. In this case, we may not need "a minimum consensus" on such high-level goals as long as quality control is maintained by anonymous refereeing and other such mechanisms. Perhaps, one should not seek to impose one's own norms beyond the cognitive domain upon colleagues who have their own strategies in their own local contexts, e.g., for supplying the funding authorities with scientometric data and indicators. Similarly, database-managers may have their own particular concerns and quality standards. Of course, it is desirable to exchange opinions about these standards; but in an interdisciplinary field with policy relevance there are no longer yardsticks of a unified methodology that one can use for taking another's measure. Both the substance and the methodologies are continuously under discussion, and are constantly being reconstructed and refined.

Glänzel and Schoepflin state among other things that "bibliometries should not renounce social science and humanities methods." We would like to note the reflexive turn in these traditions: all normative and political considerations are locally constructed in a post-modern society. Surely this is not meant as a plea against quality control! Quality control must also be constructed: but this is a consequence of scholarly communication.
Despite cultural differences and despite different financial and institutional difficulties, one may find it useful to communicate about the substance of our field, and to seek to improve the quality of these communications in cognitive terms. Obviously, this communication is sometimes difficult. Obviously, certain sub-specialties — e.g., focussing on the use of indicators versus further developments in methodologies — will emerge. Such developments are anyhow beyond control. "Codes of Ethics" and other such mechanisms, however, tend to codify what exists, and therefore to function on the conservative side. We prefer an attitude which remains open to new problems for investigation and reflection. From this perspective, Glänzel and Schoepflin's proposal for a "code of ethics" can itself be considered as an empirical phenomenon. How would such a code of ethics function?

An example

We wish to illustrate our point about refraining from strongly normative judgements by providing an example. To this end, we have chosen the short note by Schubert and Maczelka published in a recent issue of Social Studies of Science and entitled "Cognitive Changes in Scientometrics during the 1980s, as Reflected by the Reference Patterns of its Core Journal." This example was chosen in part because Schubert was elected to receive the 1993 Price Award of Scientometrics for his outstanding contributions to the development of both the journal and the field during the last two decades. Thus, the first author of this article can be considered a high-quality scholar in this field. The question here is whether or not the community should have involved a "code of ethics" in response to his recent article. In our opinion, the community might have wished to do so in this case, if it had had one; fortunately, it did not.

In their article, Schubert and Maczelka investigated the question of whether or not the Price Index can be used as an indicator of the "hardness" of scientometrics as a field operationalized in terms of its core journal. Aside from the problematic identification of the journal with the field (perhaps the journals selects only the "harder" papers) the article contains an obvious flaw: the authors take only two datapoints, and infer from these datapoints to a trend over the period under discussion. They then conclude that scientometrics has indeed turned upward in terms of the measured Price Index.

In previous discussions with Schubert as a contributor (cf. the special issue of Scientometrics, Vol. 20, No. 2, February 19913,8), one of us has argued that
Scientometric arguments should never be based exclusively on those points in a time series which favour a given argument; one should always look for counter-evidence. Furthermore, visual inspection may be misleading when longitudinal data are complex. But let us leave this latter point, and focus on the former.

Figure 1 exhibits the Price Index for every year of *Scientometrics* through 1992. We have added three lines: (i) the (dotted) linear regression line, which is *not* significant; (ii) the line connecting the two datapoints selected by Schubert and Maczelka, i.e., 1981 and 1990; and (iii) a line connecting datapoints for two later years, i.e., 1983 and 1992. The last line exhibits a decline, while Schubert and Maczelka argued in favour of an increase. Both claims are hollow. In other words, Schubert and Maczelka's major research finding melts away when examined with greater precision.

![Fig. 1. The Price Index of *Scientometrics* per year](image)

One could argue that these authors have cleverly exploited the inability of the editorship and readership of *Social Studies of Science* to assess scientometric research articles. However, the Society for the Social Studies of Science (4S) has just given its Bernal Award to this same editor (David Edge), who indeed merits our respect. Even within such a small area as science studies, a variety of incommensurate standards are currently in use. This is not a phenomenon which occurs only on the 'qualitative' side of the field. We could just as easily have provided an example of sociological naiveté in an outstanding article of *Scientometrics*. The problem of partial incommensurability must be taken seriously as an empirical problem in science studies.
This problem of partial incommensurability is the static analogon of the tension noted above between crisis and critique: the sciences evolve in terms of discursive reasoning about uncertainties both at the level of the substances under discussion and at the level of standards. More recently, we have begun to realize that these asynchronous but interacting processes can be made subject to formal modelling. The results, of course, will require appreciative understanding.

References