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M. John/ F. Fritsche: Bibliometrics for technology forecasting and assessment – a preliminary application to human enhancement

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Scope:	Bibliometrics as a method for technology forecasting and the analysis of scientific landscapes.
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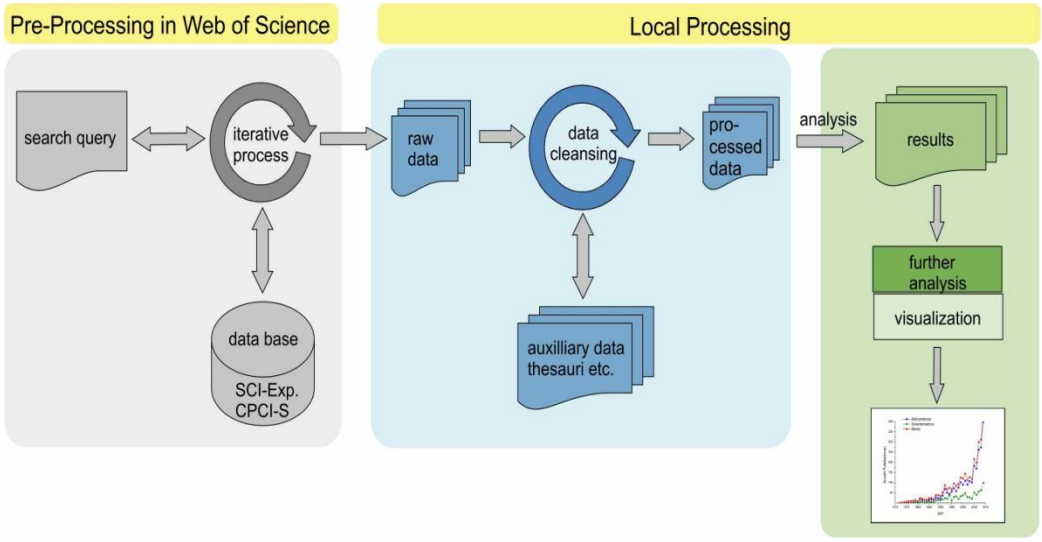
For present-day decision makers not so much a lack but contrarily a plethora of information forms a challenge. Since bibliometric methods offer the chance to structure the growing amount of at least scientific publications, we want to address in this contribution the question, whether such quantitative methods might form a meaningful contribution to the methodological portfolio of technology foresight and technology assessment.

While bibliometric methods have been applied by technology forecasters increasingly often in recent years, they have, to the best of our knowledge, not yet been adopted to problems regarding the assessment of technologies.

Bibliometrics is a collection of quantitative and statistical techniques, which aim to analyze scientific literature. It relies on the bibliographic information of scientific papers stored in an appropriate data base. A prototypical bibliometric workflow comprises three different phases. The first phase covers the elaboration of a search query which aims to delineate the field of interest as accurately as possible. While the second phase deals with the acquisition and cleansing of the bibliometric data, the last phase covers the analysis and visualization of the data.

This method is applied to the analysis of the scientific landscape concerning the research on human enhancement. Furthermore the results of this analysis are compared with those of other scientific themes, namely the research on fullerenes and cold fusion, the latter being a prototypical example of so called pathological science. The problem of constructing an appropriate search query is addressed.



Next different types of bibliometric observations ranging from the publication dynamics to more complex ones like the analysis of cooperation and citation networks are used to characterise the scientific landscape.

It is demonstrated that such bibliometric analyses allow a clear distinction between different types of emerging topics like the research on human enhancement or on fullerene. Furthermore it will be discussed, whether or not it is possible to identify examples of pathological science by means of bibliometric analyses.

The talk will try to demonstrate how bibliometric methods assist researchers and decision makers in gaining insight into the structure of a specific scientific landscape. By lurking into scientific communication it is possible to extract useful information from scientific publications, which go well beyond their respective scientific content. Finally we will discuss if and how these methods might be useful with respect to the specific aspects of technology foresight and technology assessment.