# CHE Research Ranking

## *Further Prospects*

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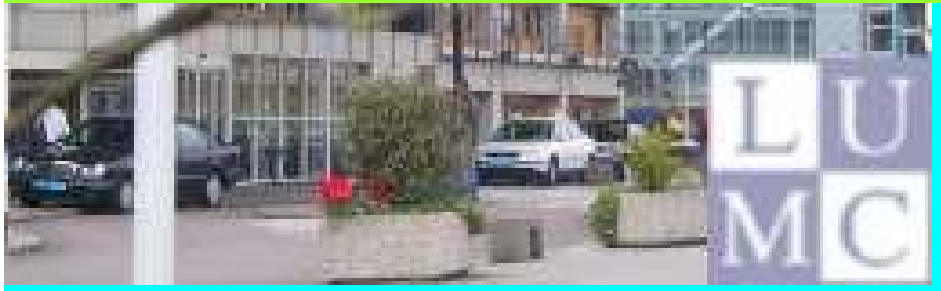
# Contents of this short presentation

- Basic CHE principles
- Further steps to research performance measurement




# Basic CHE principles

- field-specific measures
- different indicators for different aspects

(external funding/contract research, PhD's, publications, impact, peer-based reputation)

- focus on profiles rather than on rankings

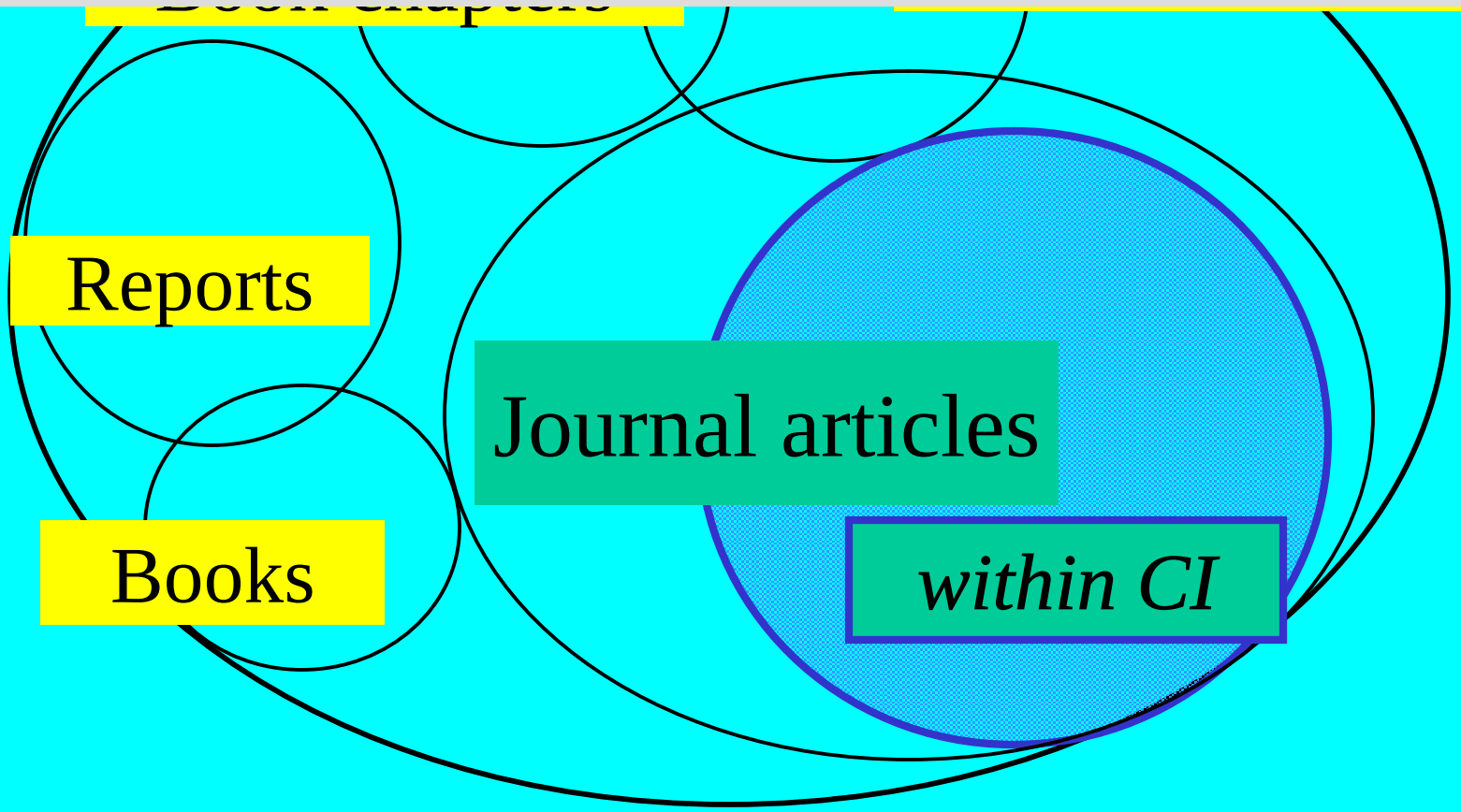
(e.g., more application-oriented vs. basic research oriented)

# Mainly qualitative

This this is how the average scientist reacts on any survey

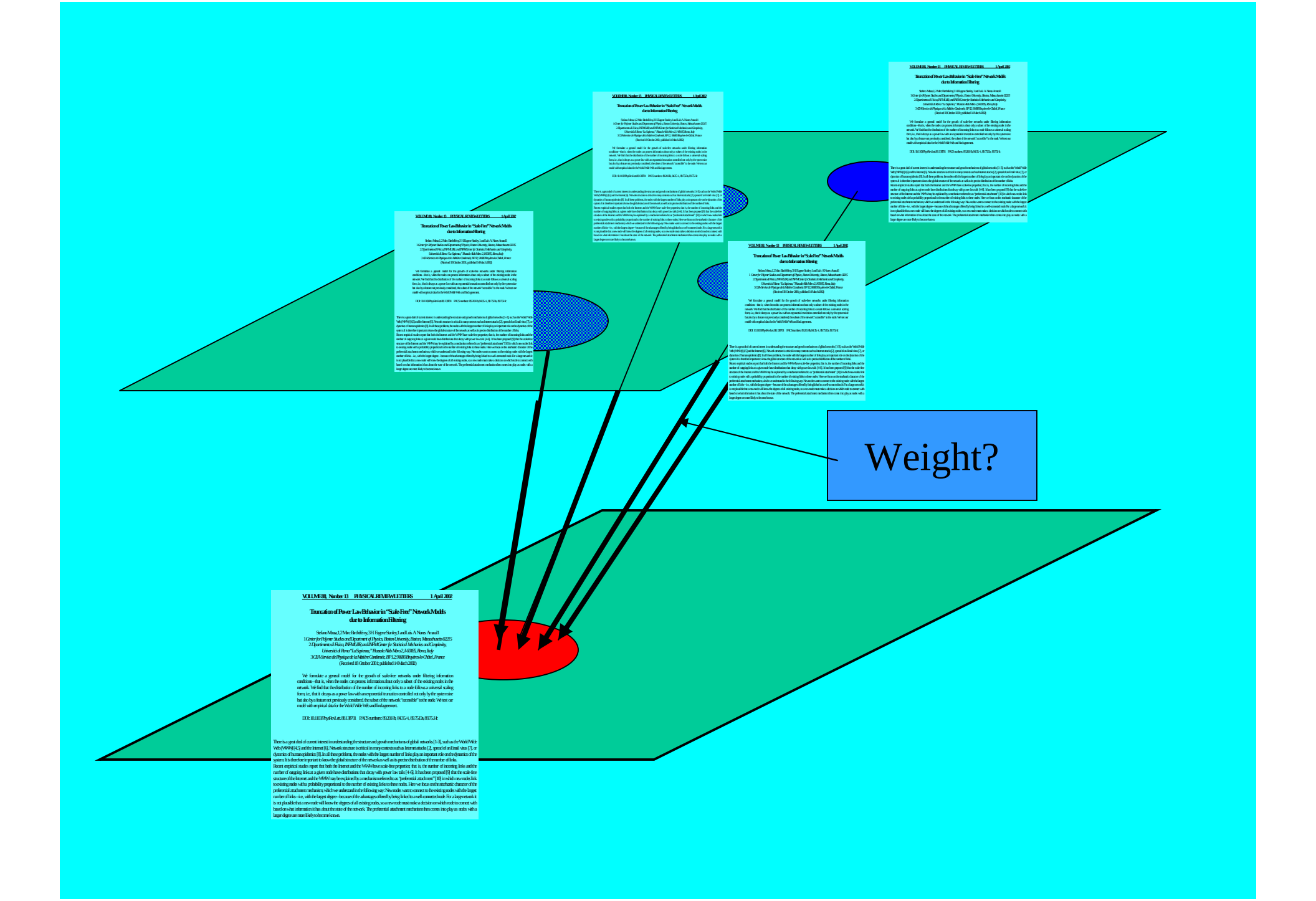
But it is the only way to get a peer-based judgment on reputation and research quality

Research results are ONLY relevant if they are communicated




…. field-specific!

# Bibliometric approach

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# Truncation of Power Law Behavior in "Scale-Free" Network Models due to Information Filtering

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We formulate a general model for the growth of scale-free networks under filtering information conditions—that is, when the nodes can process information about only a subset of the existing nodes in the network. We find that the distribution of the number of incoming links to a node follows a universal scaling form, i.e., that it decays as a power law with an exponential truncation controlled not only by the system size but also by a feature not previously considered, the robust of the network "accessible" to the node. We test our model with empirical data for the World Wide Web and find agreement.

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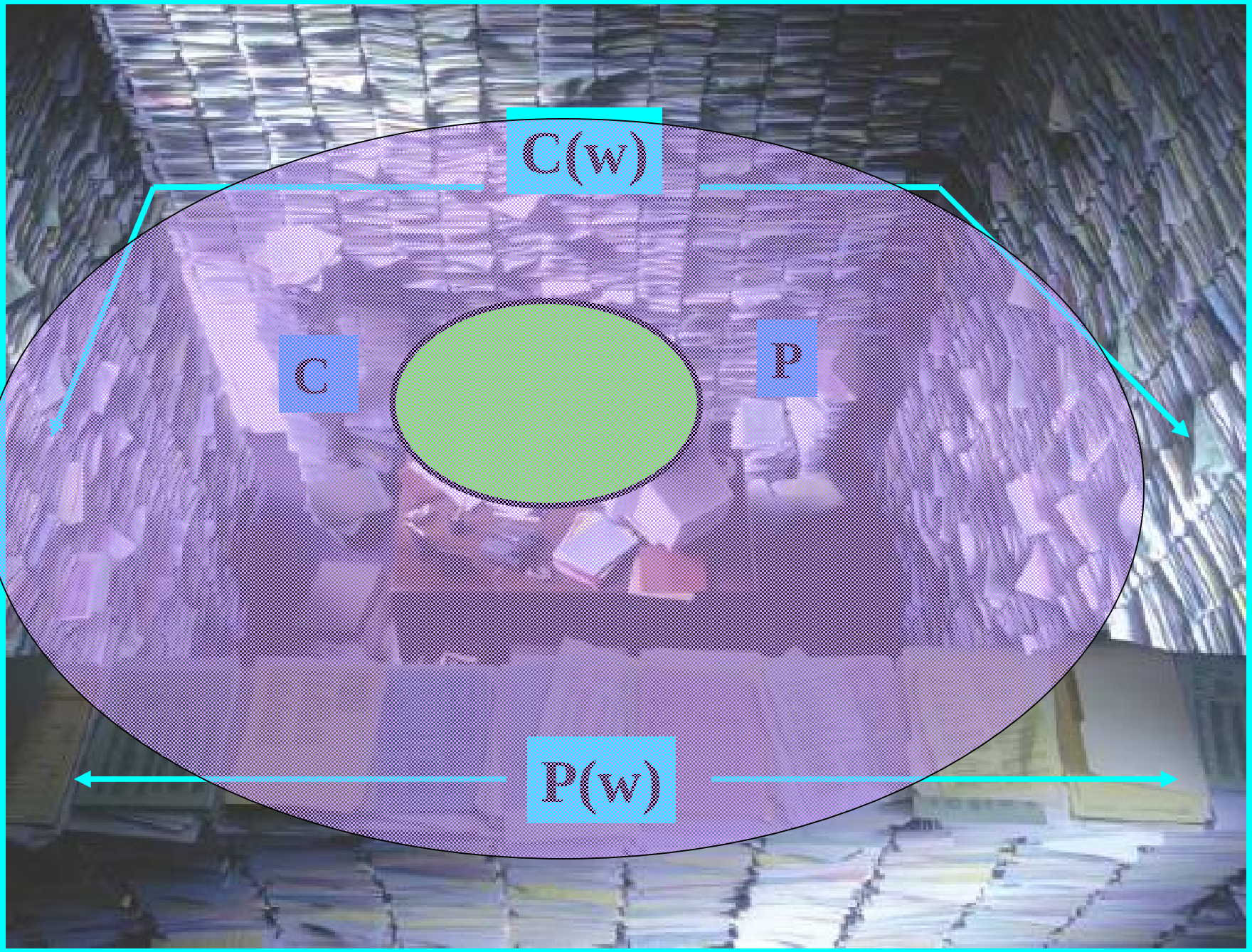
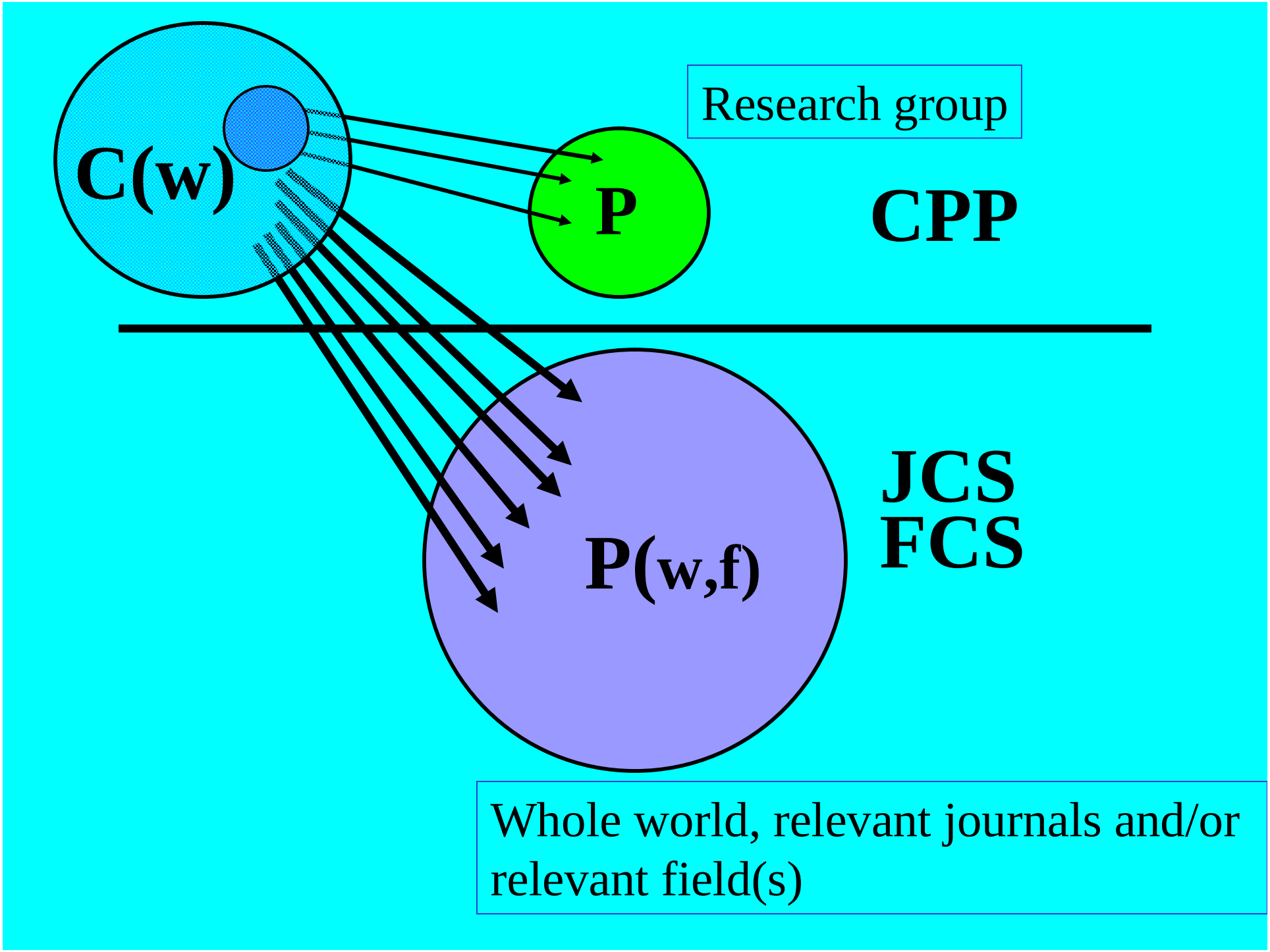
There is a great deal of current interest in understanding the structure and growth mechanisms of global networks [1–3], such as the World Wide Web (WWW) [4,5] and the Internet [6]. Network structure is critical in many contexts such as Internet attacks [7], spread of an Email virus [7], or dynamics of human epidemics [8]. In all these problems, the nodes with the largest number of links play an important role and the dynamics of the system. It is therefore important to know the global structure of the network as well as its precise distribution of the number of links.
Recent empirical studies report that both the Internet and the WWW have scale-free properties; that is, the number of incoming links and the number of outgoing links at a given node have distributions that decay with power law tails [4–6]. It has been proposed [9] that the scale-free structure of the Internet and the WWW may be explained by a mechanism referred to as "preferential attachment" [10] in which new nodes link to existing nodes with a probability proportional to the number of existing links to these nodes. Here we focus on the stochastic character of the preferential attachment mechanism, which we understand in the following way: New nodes want to connect to the existing nodes with the largest number of links—i.e., with the largest degree—because of the advantages offered by being linked to a well-connected node. For a large network it is not plausible that a new node will know the degrees of all existing nodes, so a new node must make a decision on which nodes to connect with based on what information it has about the state of the network. The preferential attachment mechanism then comes into play as nodes with a larger degree are more likely to become known.

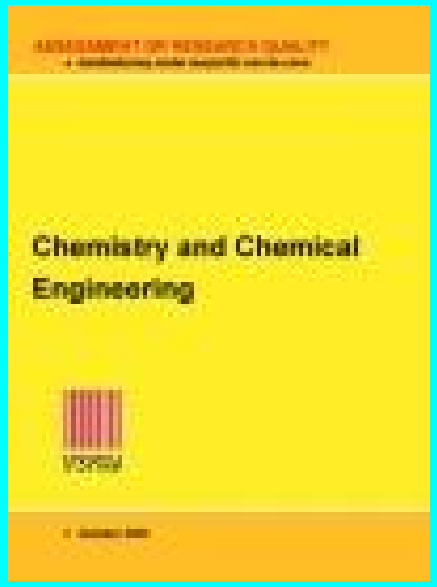

C(w)
C
P
P(w)


C(w)
P
Research group
CPP
P(w,f)
JCS
FCS
Whole world, relevant journals and/or relevant field(s)

# Further steps to research performance measurement

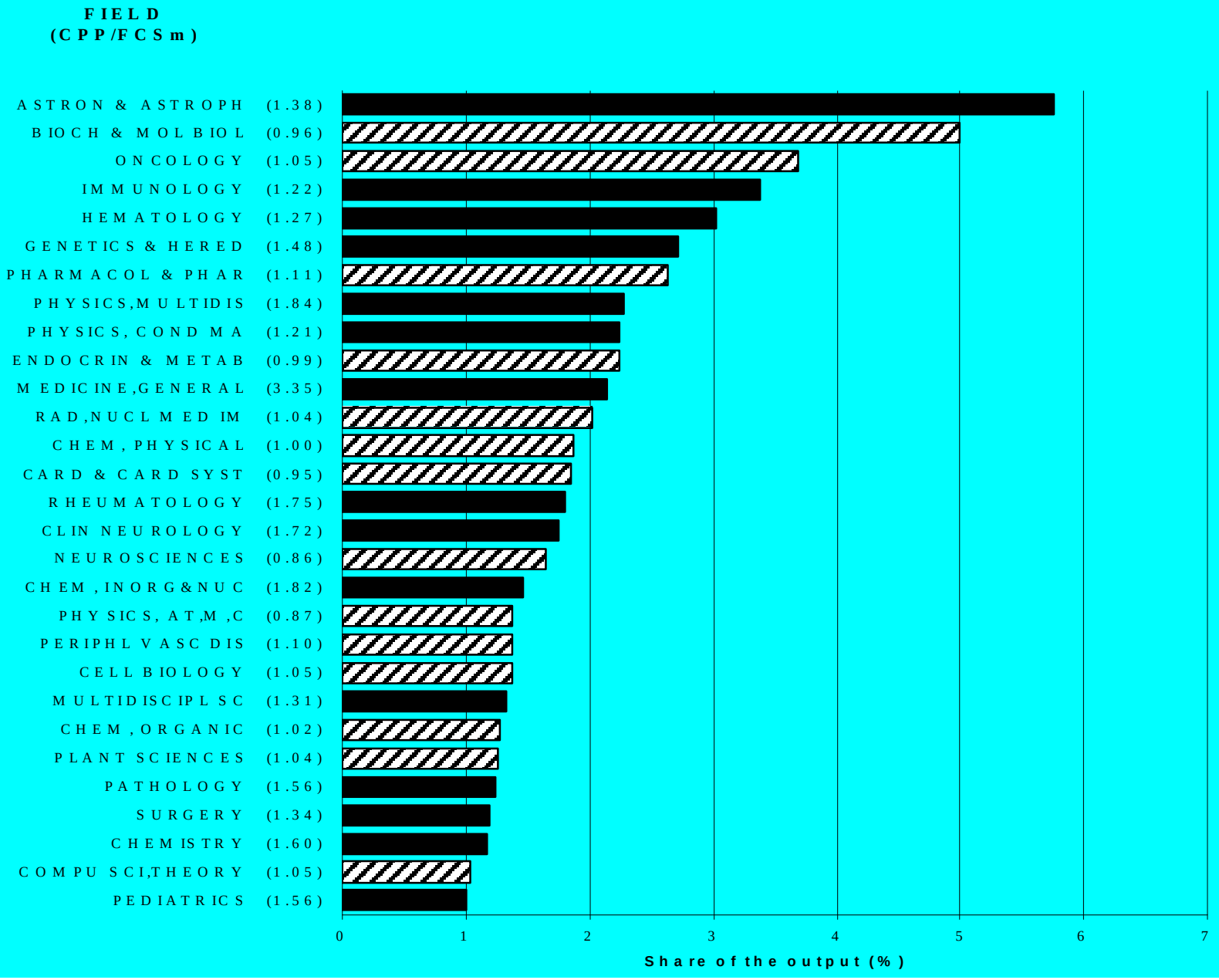
| | P | C | CPP/FCSm | Qual |
|---|---|---|---|---|
| KUN // Buydens | 92 | 554 | 1.39 | 5 |
| KUN // Gal | 69 | 536 | 2.61 | 4 |
| KUN // Hilbers | 129 | 3780 | 2.47 | 5 |
| KUN // Kentgens | 80 | 725 | 1.45 | 4 |
| KUN // Nolte | 188 | 1488 | 1.49 | 5 |
| KUN // Rutjes | 52 | 424 | 2.29 | 4 |
| KUN // Scheeren | 52 | 362 | 1.39 | 3 |
| KUN // Vlieg | 171 | 1646 | 2.21 | 5 |
| KUN // Vriend | 132 | 2581 | 1.67 | 4 |
| KUN // de Jong | 119 | 2815 | 1.66 | 4 |
| KUN // van Venrooij | 141 | 1630 | 0.94 | 4 |
| KUN // van der Avoird | 102 | 1025 | 1.40 | 5 |
| LEI // Abrahams | 77 | 1883 | 3.13 | 4 |
| LEI // Bedeaux | 115 | 623 | 0.83 | 4 |
| LEI // Brouwer | 84 | 1164 | 1.21 | 4 |
| LEI // Canters | 156 | 1785 | 1.03 | 4 |
| LEI // Fraaije | 67 | 268 | 0.72 | 4 |
| LEI // Kleyn | 184 | 1036 | 0.95 | 4 |
| LEI // Lugtenburg | 224 | 1312 | 0.89 | 5 |
| LEI // Pleij | 70 | 699 | 0.79 | 3 |
| LEI // Reedijk | 350 | 2785 | 1.73 | 5 |
| LEI // de Groot | 121 | 898 | 0.84 | 4 |
| LEI // van Boom | 357 | 3718 | 1.21 | 5 |
| LEI // van Hemert | 75 | 682 | 1.44 | 4 |

VSNU Evaluation of NL Chemistry 2002 by an international peer committee,
150 groups, first 24 as an example



# Output and impact per field
## 2000 - 2003

## Leiden University



Best practice (most fair judgment) will be an advanced combination of qualitative (peer-based reputation) and quantitative (bibliometric) assessment

# How to realize?
# Strategic alliance of CHE, CHEPS, CWTS