Journal Classifications
Based on Citation Data:
The Comparison and Suitability of Three Distance Measures

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Why journal classifications matter?

CEES Journal Bibliometric Report 2011
(psychology and education sciences)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Journal Name</th>
<th>Impact Factor</th>
<th>Citation Impact</th>
<th>Category</th>
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<tbody>
<tr>
<td>1</td>
<td>Psихолошка речник</td>
<td>1.344</td>
<td>0.308</td>
<td>M20</td>
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<td>Serb J Sports Sci</td>
<td>1.051</td>
<td>1.100</td>
<td>M51</td>
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<td>3</td>
<td>FU: Physical Educ&amp;Sport</td>
<td>0.641</td>
<td>0.624</td>
<td>M52</td>
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<td>Zb INS pedag istravija</td>
<td>0.400</td>
<td>0.332</td>
<td>M52</td>
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<td>5</td>
<td>Fizička kultura</td>
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<td>0.317</td>
<td>M52</td>
</tr>
</tbody>
</table>

3\textsuperscript{rd} on the list
4\textsuperscript{th} category of journal quality

CEES Journal Bibliometric Report 2011
(psychology and education sciences)
It's all relative...

CEES Journal Bibliometric Report 2011 (health sciences)

<table>
<thead>
<tr>
<th>r.br.</th>
<th>naziv časopisa</th>
<th>dva</th>
<th>bet</th>
<th>PK</th>
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<td>Fizička kultura</td>
<td>0.317</td>
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<td>M52</td>
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</tbody>
</table>

1st on the list

2nd category of journal quality

CEES Journal Bibliometric Report 2011 (health sciences)
Why should we use citation data?

- **Ex ante** journal classification
  - already existing subject categories
  - classification "by force"

- **Ex post** journal classification
  - exploring relationships among journals (e.g. *citation relations*)
  - yields more "natural" categories
Research problems

1. Local level

At the University of Novi Sad, psychology, education, and sport sciences are under the jurisdiction of the Expert Council for A&H.

2. Science policy level

Journal Bibliometric Report relies on two different subject classifications - Ministry of Education and Science (MESS) vs. Frascati.

3. Global level

Journal citation data are often considered unreliable for describing the structure of social sciences and humanities.
Methodology

- **Sample**
  - 137 Serbian journals in the fields of social sciences and humanities
  - Journal citation data for a ten-year period (2002-2011) were taken from SCIndeks database

- **Statistical procedure**
  - Three proximity/distance measures were calculated
  - Distance matrices were used to extract (PAM) and visualize (MDS) clusters of journals
Three proximity measures

1. Journal intercitations (direct citations)

2. Journal co-citations

3. Bibliographic journal coupling
Some numerical results

Adjusted Rand Indices (can range from 0 to 1)

<table>
<thead>
<tr>
<th></th>
<th>direct citations</th>
<th>co-citations</th>
<th>bibliographic coupling</th>
</tr>
</thead>
<tbody>
<tr>
<td>MESS</td>
<td>0.43</td>
<td>0.34</td>
<td>0.53</td>
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<tr>
<td>Frascati</td>
<td>0.36</td>
<td>0.30</td>
<td>0.37</td>
</tr>
</tbody>
</table>

1. Bibliographic coupling > other measures
2. MESS classification > Frascati classification
1. weak structure (very sparse matrix)
2. heterogenous clusters (many spurious memberships)
3. large number of small clusters (e.g., geographical proximity)

Economics
Hierarchical tree plots
Journal co-citations

- Psychiatry and Special Education
- Sport Sciences
- Psychology and Education Sciences
Hierarchical tree plots
Bibliographic journal coupling

1. homogeneous clusters
2. very clear structure
<table>
<thead>
<tr>
<th>MESS / citation data</th>
<th>Frascati</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychology and Education Sciences</td>
<td>Psychology</td>
</tr>
<tr>
<td>Philosophy, Sociology, and Political Sciences</td>
<td>Education Sciences</td>
</tr>
<tr>
<td>Anthropology and Ethnology</td>
<td>Philosophy (humanities)</td>
</tr>
<tr>
<td></td>
<td>Sociology, Anthropology, Ethnology</td>
</tr>
</tbody>
</table>
MDS map of journals (BC)
Sociology and Philosophy
Language and Literature
MDS map of journals
Psychology and Education Sciences
Ethnology (and Anthropology)
Conclusions

1. Psychology is not related with humanities. It is closer to psychiatry and special education.

2. MESS classification is generally more appropriate for creating journal reference groups, but should be more specific.

3. Citation data are suitable as a mean of scientific domain analysis at the journal level, even in the fields of SS&H.
Questions?