A Field Normalized Exploration of Awoken Papers

Hansen, Samuel

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Mathematics is the biggest driver for the creation of Awoken Papers

Awoken Papers & Sleeper Coefficients

- Awoken Papers (APs) are papers which receive few to no citations for a number of years and then receive a sudden spike in citations
- Sleeper Coefficients (SC) for all articles in Clarivate's Web of Science were calculated using the formula from Ke, Ferrara, Radicchi, and Flammini:
  \[ B = \sum_{t=0}^{m} \frac{c_m - c_t}{\max(1, c_t)} \cdot t + c_0 - c_t \]
  - \( t \) is the age of an article
  - \( c_t \) is the number of citations it receives in year \( t \)
  - \( m \) is the year with the most citations.
- The papers with SC values in the top 0.1% of all articles are defined to be APs
- A Discipline's AP Ratio is a discipline's number of APs divided by its total article count

Raw AP Counts and Ratios

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<tbody>
<tr>
<td>Physics, Multidisciplinary</td>
<td>Chemistry, Multidisciplinary</td>
<td>Anatomy &amp; Morphology</td>
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<td>Chemistry, Multidisciplinary</td>
<td>Physics, Multidisciplinary</td>
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<td>Mathematics</td>
<td>Mathematics</td>
<td>Physics, Multidisciplinary</td>
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<td>Medicine, General &amp; Internal</td>
<td>Chemistry, Physical</td>
<td>Mathematics</td>
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<tr>
<td>Physics, Applied</td>
<td>Medicine, General &amp; Internal</td>
<td>Audiology &amp; Speech-Language Pathology</td>
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<tr>
<td>Surgery</td>
<td>Physics, Applied</td>
<td>Anthropology</td>
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Observations

- Mathematics, in many different forms, is by far the most likely area to generate highly cited APs
  - At least half of the top 10 disciplines for each citation cut off are mathematical in nature
- Multi- and Interdisciplinary, social science, and engineering disciplines all generate highly cited APs with regularity
- For mathematics articles published in the last century, there is
  - Over a 1 in 10 chance that is an Awoken Paper for articles with 100 Citations (11.5%, the next highest is 6.6%)
  - Over a 1 in 5 chance that is an Awoken Paper for articles with 300 Citations (22.7%, the next highest is 16.2%)
  - Over a 1 in 4 chance that is an Awoken Paper for articles with 500 Citations (26.2%, the next highest is 21.9%)

Limitations

- Web of Science indexes more STEM content than other subject areas
- Not all Subject Categories are indexed for whole period under investigation

http://www.pnas.org/doi/10.1073/pnas.1424329112