

The Art and the Science of Academic Publishing

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Outline

- 1 Journal Impact Factor
- 2 Author Impact Factor
- 3 Factors towards success
- 4 Clear Vision
- 5 How to write a paper?
- 6 Some useful tips

What is an Impact Factor?

$$IF_y = \frac{\text{Citations}_y}{\text{Publications}_{y-1} + \text{Publications}_{y-2}}$$

Example

Nature had an impact factor of **41.577** in 2017.

$$IF_{2017} = \frac{\text{Citations}_{2017}}{\text{Publications}_{2016} + \text{Publications}_{2015}} = \frac{74090}{880 + 902} = 41.577$$

- This means that papers published in 2015 and 2016 received roughly 42 citations each in 2017.
- Note that 2017 impact factors cannot be reported until 2018.

What is an h -index?

Let function f be the number of citations for each publication, then

$$h\text{-index}(f) = \max\{i \in \mathbb{N} : f(i) \geq i\}$$

Example

If we have a researcher with 5 publications A, B, C, D, and E with 10, 8, 5, 4, and 3 citations, respectively, the h -index is equal to 4 because the 4th publication has 4 citations and the 5th has only 3. In contrast, if the same publications have 25, 8, 5, 3, and 3 citations, then the index is 3 because the fourth paper has only 3 citations.

- h -index highly depends on the “academic age” of the researcher.
- m -quotient is defined as h/n , where n is the number of years since the first publication.

Is one's own interest in a topic a sufficient criterium of success?

- Most young people think so. But the answer is not that straightforward.
- People are complex and they do switch their interests.
- Sometimes failures should be taken seriously and one always has an option to pursue something else.
- However we assume that Ph.D. candidate has a strong interest and should be relentless to some degree.
- Academic career is a demanding profession and should always be chosen with enough foresight.

What is the single most important thing that can help you succeed?

- There may be several possible answers.
- One answer is “experience”. But how can one have it before starting anything?
- In my humble opinion, following the lead of your mentors and putting in the **hard work** is the most important thing that will surely help you succeed.
- There is no magic stick or shortcut in science.

If you fail to plan, you plan to fail

- **Time** is an important constraint.
- Thus, you should have some sort of a plan than nothing at all.
- **Organization** is the key.
- Your plan should be **dynamic** and should possess some degree of flexibility.
- The plan should be more specific and **concrete** in the short-run and more fluid and **lucid** towards the longer time frames.

Should you focus on your actual topic or first learn the relevant data analysis tools before embarking on the literature?

- Both are extremely important.
- Assess yourself. Plan accordingly.
- Let the literature guide you and then slow down a bit and acquire the necessary tools.
- Which tools are necessary? This is where the seniors could be of most help.
- Learn to code. And help your juniors as well.

How much help should you expect from your seniors?

- Extreme answers are the least probable.
- Mostly you will be at your own.
- Follow the plan and work 70 hours per week.
- Meet your supervisor weekly or at least bi-weekly.

Weinberg's four golden lessons ¹

- No one knows everything, and you don't have to.
- Go for the **messes**, this is where the action is.
- Sometimes, you should forgive yourself for wasting time.
- Learn something about the **history** of science.

¹Weinberg, S. Four golden lessons. Nature 426, 389 (2003). <https://doi.org/10.1038/426389a>

How you grade yourself among your peers?



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Absents : Sir W.H. BRAGG, H. DESLANDRES et E. VAN AUBEL

- Landau's logarithmic scale of productivity from 0 to 5.
 - 0.5 Albert Einstein (1879-1955), Isaac Newton (1643-1727)
 - 1 Werner Heisenberg (1901-1976), Erwin Schrödinger (1887-1961), Paul Dirac (1902-1984), Niels Bohr (1885-1962), Satyendra Nath Bose (1894-1974), Eugene Wigner (1902-1995), Louis de Broglie (1892-1987), Enrico Fermi (1901-1954), Wolfgang Pauli (1900-1958), Max Planck (1858-1947)
 - 2 Lev Landau (1908-1968)
 - 3 ...
- Landau was modest in ranking himself at 2, but later moved him to 1.5 when he had solved major puzzles like the theory of second order phase transitions and superfluidity, which earned him the Nobel Prize in 1962.

How to formulate your paper?

- The primary **reason** to write to formulate and organize an informed, coherent and sophisticated set of ideas about something important.
- Make an **outline** and fill in the first **draft** focusing on the technical calculations and methodical part first.
- Writing down a detailed paper may take an order of magnitude more time the relevant time spend on calculations especially in theoretical physics.
- Pay special attention to the **ordering of paragraphs** and the **ordering of sentences** within each paragraph.
- Introduction can be usually left for the last. It is nonetheless the most important part of your paper which signifies the primary **motivation** behind your research.
- Always pay attention to the **references** and the bibliography styles.

What pitfalls must be avoided in the course of submitting and revising?

- Always **proofread** several times before submission.
- While referring always give credit to the **original sources** even though you may have studied from the review paper.
- The figures copied from other sources are also treated as **copyrights**, always refer their source.
- In the response to the reviewers, do not try to broaden the scope of your answers. Often times there are rival theories and they do contradict each others. Defence of your own arguments should not necessarily means that you have to criticize the opposing theories. Focus on the **depth** alone and not the expanse of your arguments.
- **Highlight** the revisions in color and also mention the line number for the ease of reviewers.

Thank You