Theory and Practice of Logic Programming and the ISI Web of Knowledge

We are living in a time where university administrators are increasingly relying on various measurements to assess the quality of research. After all, we cannot expect they read our own research papers to make a personal judgement. Whether we like it or not, but in many places, papers in *good* journals are a must for research results to be taken seriously. Typically, university administrators use the *ISI web of Knowledge*, a product of the Thomson Corporation, to make the assessment. More precisely, they make use of the *Journal Citation Report* to obtain the impact factor of a journal and to compare it with the impact factor of other journals in the discipline.

The above explains why giving up the *Journal of Logic Programming* out of protest with the excessive pricing policies of Elsevier was a difficult step. *Theory and Practice of Logic Programming* started in 2001 with Cambridge University Press, and being a new journal, was not included in the ISI reports. Fortunately, with the backing of SPARC, the *Scholarly Publishing and Academic Resources Coalition*, "an alliance of academic and research libraries and organisations working to correct market dysfunctions in the scholarly publishing system", TPLP appeared already in the 2003 edition of the *Journal Citation Report*. That was the first year for which there were enough data to compute a regular impact factor.

TPLP is the journal of the Logic Programming community; it is important for the community that it is a thriving journal; members of the community can contribute to this thriving. One aspect of its thriving is how well it does in those Journal Citation Reports. In the remainder, we dwell on the impact factor and on some other information one can extract from the ISI reports. While many have heard about impact factor, few precisely know how it is computed.

The impact factor is derived from the publications that are covered by the ISI database. Important for our community is that (all Proceedings that appear in) Lecture Notes in Computer Science is included (but not Proceedings by ACM Press, IEEE Press, Morgan Kaufmann, ...).

In the 2003 Journal Citation Report, one finds the following data:

Cites in 2003 to articles published in 2002:	22
Cites in 2003 to articles published in 2001:	24
Sum:	46

and

Number of articles published in 2002:	19
Number of articles published in 2001:	22
Sum:	44

The impact factor is obtained by dividing the number of cites by the number of articles, i.e., 46/44= 1.045. Out of 345 journals listed in computer science, the ranking of TPLP is 108.

Similarly, in the 2004 Journal Citation Report, one finds:

Cites in 2004 to articles published in 2003:	40
Cites in 2004 to articles published in 2002:	45
Sum:	85

and

Number of articles published in 2003:	23
Number of articles published in 2002:	19
Sum:	42

This gives an impact factor of 85/42= 2.024. Out of 347 journals in computer science, the ranking is 46. (Apparently, the two extra journals listed in 2004 are Lecture Notes in Computer Science, and Lecture Notes in Artificial Intelligence. Although (some? all?) articles published in them are in the corpus, no impact factors for LNCS and LNAI are given for 2003 —both are listed in reports previous to 2003—.)

Note that the impact factors of both years are almost unrelated as the cites are originating from a different set of data. The only overlap is in the window of articles whose citations are counted. This window has a width of two years hence overlaps with one year.

The citation reports also allows one to see which sources are citing TPLP articles. Lumping together figures from both years, one arrives at the following table where the column *IF* refers to cites that contribute to the impact factor, the column *other* refers to cites to articles that are not in the window used for computing the impact factor, and the column *total* is the sum of both.

Citing journal	IF	other	total
Lecture Notes in Compute Science	60	15	75
Lecture Notes in Artificial Intelligence	24	2	26
Theory and Practice of Logic Programming	11	6	17
Computational Intelligence	9	0	9
Fundamenta Informaticae	4	2	6
Annals of Mathematics and Artificial Intelligence	4	1	5
Information and Computation	2	1	3
Science of Computer Programming	3	0	3
IEEE Transactions on Knowledge and Data Engineering	2	0	2
Information Sciences	2	0	2
Theoretical Computer Science	1	1	2
Advances in Virus Research	2	0	2
Others with each 1 citation	7	6	13

The table shows how dependent the impact factor is on LNCS/LNAI: 84 out of 131, i.e., more than 75% is due them. Not surprisingly if one realises that most volumes are Proceedings that, due to the fast publication cycle, refer to the recent work. In contrast, journal papers have a much slower publication cycle so that references to recent work are much less frequent.

Remarkably is that *Advances in Virus Research* has 2 references to TPLP. It concerns two different papers (in Volume 60, 2003) that refer to *Yi-Dong Shen, Li-Yan Yuan, Jia-Huai You, and Neng-Fa Zhou, Linear Tabulated Resolution Based on Prolog Control Strategy, TPLP, Vol 1(1): 71-103.* I have no online access to that journal and could not check whether this is indeed the case. However, I could verify that neither *Trends in Biotechnology 23(2) 2005* nor *Theoretical and Applied Genetics 109(4), 2004* refer to TPLP as claimed by ISI. However, a paper on *Simulating complex intracellular processes using object-oriented computational modelling* in *Progress in Biophysics & Molecular Biology 86(3), 2004* does indeed refer to *Andy King and Lunjin Lu, A Backward Analysis for Constraint Logic Programs, TPLP, Vol 2(4&5) pp 517-547* as claimed by ISI.

There exists also a different kind of errors. Using *Cited Reference Search*, I attempted to find all citations to TPLP. I found 182 citations of which 14 had various errors that caused them not to be linked to the proper entry (in which case they also cannot contribute to the impact factor).

Errors in citations	occurrences
wrong page number:	7
wrong year:	2
missing Volume number:	2
missing page number:	1
wrong initials in author name:	1
incomplete initials in author name:	1

Browsing through the list, I was constructing the following list of most cited papers:

12 citations Andy King and Lunjin Lu, A Backward Analysis for Constraint Logic Programs, Vol 2(4&5) pp 517-547.

12 citations Michael Leuschel and Maurice Bruynooghe, Logic program specialisation through partial deduction: Control issues, Vol 2(4&5) pp 461-515.

9 citations James P. Delgrande, Torsten Schaub, Hans Tompits: A Framework for Compiling Preferences in Logic Programs, Vol 3(2) pp 129-187.

9 citations John Grant and Jack Minker, A logic-based approach to data integration, Vol 2(3) pp 323-368.

9 citations Michael J. Maher, Propositional Defeasible Logic has Linear Complexity, Vol 1(6) pp 691-711.

8 citations Michael Leuschel, Jesper Jørgensen, Wim Vanhoof, Maurice Bruynooghe, Offline specialisation in Prolog using a hand-written compiler generator, Vol 4(1&2) pp 139-191.

8 citations Dino Pedreschi and Salvatore Ruggieri and Jan-Georg Smaus, Classes of terminating logic programs, Vol 2(3) pp 369-418.

7 citations Marcelo Arenas, Leopoldo Bertossi, Jan Chomicki, Answer Sets for Consistent Query Answering in Inconsistent Databases, Vol 3(4&5) pp 387-391.

7 citations Annalisa Bossi, Nicoletta Cocco, Sandro Etalle and Sabina Rossi, On modular termination proofs of general logic programs, Vol 2(3) pp 263-291.

7 citations Esra Erdem and Vladimir Lifschitz, Tight logic programs, Vol 3(4&5) pp 499-518.

6 citations Hudson Turner, Strong equivalence made easy: nested expressions and weight constraints, Vol 3(4&5) pp 609-622

One can ask to sort the list according to source title. LNCS/LNAI does not appear as a single item, but the list contains (pieces of) titles of individual volumes. One obtains (only titles with more than 2 citations):

Source Title	Record Count	% of 182
Theory and Practice of Logic Programming	22	12.0
Logic Programming, Proceedings	11	6.0
Logic Based Program Synthesis and Transformation	10	5.5
Logic Programming and Nonmonotonic Reasoning, Proceedings	10	5.5
Program Development in Computational Logic	10	5.5
Computational Intelligence	4	2.2
Practical Aspects of Declarative Languages, Proceedings	4	2.2
Theoretical Computer Science	4	2.2
Annals of Mathematics and Artificial Intelligence	3	1.6
Computational Logic in Multi-Agent Systems	3	1.6
Inconsistency Tolerance	3	1.6
Journal of Logic and Computation	3	1.6
Logics in Artificial Intelligence, Proceedings	3	1.6

I assume that *Logic Programming, Proceedings* refers to different instances of ICLP. Though apparently, also here things can go wrong; the list has also an entry *Logics Programming, Proceedings* (with two citations) that likely also refers to an ICLP conference.

Conclusion To have a thriving journal with a good impact factor, its recent papers need be cited. You can contribute to the standing of TPLP in two ways. One one hand by submitting important work, either original research (eventually an elaboration of a conference paper) or survey work that will obtain many citations. On the other hand by precise citations to (recent) TPLP papers, in particular when you publish in the LNCS/LNAI series of Springer. The most up to date information about published and forthcoming papers are on the ALP website:
`http://www.cs.kuleuven.ac.be/~dtai/projects/ALP/TPLP/`
Other sources are DBLP:
`http://www.informatik.uni-trier.de/~ley/db/journals/tplp/index.html`
and Cambridge University Press:
`http://journals.cambridge.org/action/displayJournal?jid=TLP`

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