

## **Research statement, Urban Larsson December 2017**

Game theory is an amazing subject, and it has connections to many other fields of mathematics, and other sciences. In the last 12 years, I have produced about 40 papers in Combinatorial Game Theory (CGT) with connections in Number theory and Computer science, and with more than 30 coauthors. I am the editor of a book in combinatorial games, GONC5, and a Special issue with papers in IJGT (see my CV).

Many research manuscripts (and also papers to some extent) lack in the presentation. I ponder upon the reason for this. Several of my own manuscripts have had a poor presentation, but with feedback from reviewers and colleagues, they have improved a lot.

A research field might be small, only very few experts can be asked to act as referees. Then, since they already know the subject very well, they do not ask for a detailed presentation. Therefore a field might continue to be small. This is not a good development. I am actively working to have papers be self-sustained, and self-explanatory, or at least consistent and clear about whom the audience is, and exactly what background is required.

Worldwide math education does not seem to be teaching (graduate) students towards great authorship. I believe, most time is spent on learning mathematics and the theorem proof part. I believe one assumes that the author part of a solid math result would take care of itself. However, for most people, this seems not to be the truth. As an editor I discovered that only one out of 10 math manuscripts has a reasonable presentation, and the rest fail in many respects to introduce the subject and motivate an audience to read further. Often, the introduction is so poor that it makes more sense to simply flick through the manuscript and skim the results to get an overview of what is proposed. I do not believe that we should publish manuscripts that cannot present themselves. Unless, we are firm in guiding the authors to write better (and it is sometimes a very tedious job) then a small field will remain small, and what is worse, we may fail to discover potential mistakes in the actual proposed results.

What should we publish? If we have original research ideas, then they should probably be published, but it is a time consuming path. In the early days, I was excited about the whole process of publishing science in general, and in particular to be able to satisfy the high criteria of the math community. I had wonderful assistance from reviewers to become a better author. My future community always seemed to be willing to teach and lead me towards a better authorship, and I was a passionate student. These days, the beginner's excitement is weakened in this respect, and I am looking for a new role in science.

What is murky told is often murky thought, so I see myself partly in an educational role in my field, and others. I have published more (varied) papers in a short time

than most authors in my field, and I guess therefore I was asked twice in the last two years to be editor of major forums for combinatorial game theorists. Besides being a leading expert in my field, I am looking to build bridges between the game theory communities.

Several ideas in combinatorial game theory have not yet been researched in the larger game's community (because game theorists in general tend to be more inclined towards economics, and know very little about combinatorial games), and ideas from economic game theory have traditionally not been pursued in the younger combinatorial game's community (here the reason is more varied, sometimes ideas simply do not seem to apply but other times I believe mostly the combinatorial game's traditions have been the hindrance).

Habitual ways within a field get strengthened by using traditional terminology, without much explanation and scrutiny. While traditions in each field help us to make progress within the field, it can be limiting in seeing larger patterns and potential connections outside the field. It is very nourishing to explain your topic of expertise for a larger audience. Inspired by recent progress, I now seek to apply expertise developed by studying combinatorial games to include other fields as well.