Quantifiers in TIME and SPACE : computational complexity of generalized quantifiers in natural language

Szymanik, J.K.

Publication date
2009

Acknowledgments

It was quite a long climb. It would have never happened without the support and inspiration from many people. If I had given a full account of everyone's help I would have never succeed in finishing on time. Therefore, some of you will have to forgive me for the following, only partial notes.

First of all, my parents have been a continuous source of motivation. They were always interested in my research and helped so much in building my confidence, optimism and energy. I am also very grateful to the rest of my family for providing me with many expressions of support.

I got for the first time interested in language, logic and cognition over 10 years ago thanks to Anna Wojdanowicz. She was the first to teach me philosophy and to encourage my independent thinking. She was also the very first critic of my very first essay on language and cognition which I wrote for the Philosophical Olympiad. This dissertation would not come to existence without her and I would be probably doing something completely different, presumably less fun.

I am grateful to all my friends with whom I had opportunity to discuss various philosophical issues in many wonderful places: climbing mountains, sailing lakes and seas, kayaking along the rivers, and bivouacking in the wildness. Let me mention Tomasz Adamski, Nina Gierasimczuk, Rafał Gryko, Konrad Grzegorzewicz, Andrzej Koroluk, Maciek Malicki, Paweł Mleczko, Maciek Mostowski, Mateusz Orliński, Jakub Pilarek, Tomasz Puczyłowski, Paweł Szewczyk, and Marcin Zajenkowski.

It was a lucky choice for me to start studying in the inter-departmental programme at the University of Warsaw (Collegium MISH), where I had a lot of freedom to develop my interests across different scientific disciplines. I am in debt to my tutors in the Collegium: Jerzy Pelc and Barbara Stanosz. Their supervision encouraged me to use the freedom for rigorous studies in the philosophy of language and related fields (logic, linguistics, mathematics, and psychology). They had a great impact on my scientific taste. I also have grown a lot through endless interdisciplinary discussions with my fellow students. For that, I especially thank: Tadeusz Ciecierski, Nina, Justyna Grudzińska, Witold Kieraś, Maria

Spychalska, and Marcin. The MISH Philosophical Circle was the first playground for organizing things in academia: edit books, prepare conferences, co-ordinate projects, apply for grants, and co-operate with other people. Now, after many years, I know that those were all very precious experiences. I am very grateful to Zbigniew Kloch who was supporting all those student initiatives.

In the second year of my studies I met the person who had the biggest impact on this thesis and my research in general. Marcin Mostowski not only taught me logic and suggested research topic, which first led me to MA thesis and then directly culminated in this dissertation, but it was also thanks to him that I started to be surrounded by logicians. I was lucky to learn from, study, and discuss logic with: Zofia Adamowicz, Mikołaj Bojańczyk, Cezary Cieśliński, Marek Czarnecki, Nina, Joanna Golińska-Pilarek (she was the first to show me Hintikka's sentence), Witek, Leszek Aleksander Kołodziejczyk, Eryk Kopczyński, Henryk Kotlarski, Michał Krynicki, Filip Murlak, Damian Niwiński, Paula Quinon, Jerzy Tyszkiewicz, Dominika Wojtyniak, Łukasz Wojtyniak, and Konrad Zdanowski. Especially, Leszek and Konrad explained to me uncountably many things about logic and inspired me with their attitude to work. I think that it is very likely that I would have never become a scientist (although I could have easily become a parody of a scientist) if I had not met Marcin Mostowski and his group.

Then, at the beginning of 2006, I took a great decision and came to Amsterdam to join ILLC as a PhD student in the GLoRiClass project. I was brave enough to jump in, partially because I had met some ILLC members before at Szklarska Poręba Workshop on the Roots of Pragmasemantics. In connection to this I want to thank Reinchard Blutner and Henk Zeevat for organizing the conference and giving us a chance to meet on the top of Szrenica every year. I had very soft landing in Amsterdam thanks to many people. First of all, the ILLC staff deserve many thanks for their support and incredible ability of solving all problems without letting me feel importunate: Marjan Veldhuisen, Ingrid van Loon, Tanja Kassenaar, Jessica Pogorzelski, Peter van Ormondt and Karin Gigengack. GLoRiClass coordinators: Krzysztof Apt, Paul Dekker, Benedikt Löwe, Ulle Endriss and my friends from the first GLoRiClass generation: Andreas Witzel and Daisuke Ikegami created extremely friendly atmosphere from the beginning, even though we were struggling with some problems in the project at that time. Moreover, I was introduced to ILLC and Amsterdam by many colleagues, among others: Tikitu de Jager (he took me on my first tour around Amsterdam and borrowed a map which I have lost, sorry for that!), and Merlijn Sevenster (we had discussed branching quantifiers long before I arrived to Amsterdam), Reut Tsarfaty, and Jelle Zuidema who were "forcing" me to have lunches (although it was usually just after I had breakfast) with other ILLC members integrating me with the Institute. Soon Amsterdam became my home when Nina, against some difficulties, decided to move to the Netherlands.

Obviously, the thesis profited a lot from my Amsterdam supervisors: Johan van Benthem and Theo Janssen. I enjoyed working with them and benefited a

lot from the ways they complemented each other.

Johan has been a great source of vision and inspiration. He suggested to me plenty of problems and turned around my perspective on logic, language and computation. I am sure that his ideas will inspire my research long after graduation and maybe one day I will be able to answer some of the questions he suggested during our conversations in his office. I have been very much motivated by Johan's never-ceasing energy for taking new research directions and creating fruitful academic life.

I am very gratefull to Theo for agreeing to be my daily-supervisor and taking the most of the responsibility for my PhD research, even though my interests and plans were not exactly in line with his. My ideas were very much shaped by our regular Monday conversations and in the process of endless rewriting to meet his standards and account for criticism. I learned a lot about how to write scientific papers and prepare presentations from him. I am also very grateful for Theo's open-mindness in supporting my vision on complexity and cognition.

ILLC is a great place for research and Amsterdam is a beautiful place to live in. I was indeed very lucky to do my PhD here. There were many people who contributed to the great atmosphere, on both scientific ans social levels, and all deserve my most gratefull thanks.

Many members of the ILLC faculty have helped me in shaping my ideas: Paul Dekker, Peter van Emde Boas, Dick de Jongh, Michiel van Lambalgen, Robert van Rooij, Remko Scha, Leen Torenvliet, Jouko Väänänen, Yde Venema, and Jelle Zuidema. Through the Institute I had also a great opportunity to meet and collaborate with researchers all over the world: Denis Bonnay, Robin Clark, Jan van Eijck, Bart Geurts, Juha Kontinen, Allen Mann, Rick Nouwen, Eric Pacuit, Ramaswamy Ramanujam, Iris van Rooij, Ingmar Visser, Dag Westerståhl, Yoad Winter. I especially thank Robin Clark, Paul Dekker, Jouko Väänänen, and Dag Westerståhl for comments on the manuscript and being on my thesis committee.

Finally, I learned a lot through discussions and collaboration with my fellow students and friends. What is important I learned not only logic but also a bunch of more practical stuff, like, how to play Texas Hold'em and win, how to fly on a redeemer or how to say "coffee filter" in Finish. I want to thank: Marian Counihan, Jakub Dotlacil, Pablo Cubides Kovacsics (I admit that I have stolen a few climbing moves from him), Cédric Dégremont, Michael Franke, Amélie Gheerbrant, Nina, Patrick Girard, Olga Grigoriadou, Daisuke, Tikitu (thanks to him "the" and "a" are mostly in their right places except perhaps for this chapter), Sophia Katrenko, Lauri Keskinen, Jarmo Kontinen (for the joint struggle to understand computational complexity theory and a lot of other kinds of fun), Lena Kurzen, Olivia Ladinig, Raul Leal Rodriguez, Michał Łukasiewicz, Stefan Minica, Petter Remen, Floris Roelofsen, Federico Sangati, Marieke Schouwstra, Jonathan Shaheen, Leigh Smith, Marc Staudacher, Reut, Joel and Sara Uckelman, Levan Uridia, Fernando Velazquez-Quesada, Aurel Wannig, Andi, Yun Qi Xue, and Jonathan Zvesper.

I am particularly in debt to Andi. First of all, since the very beginning he has been a great office-mate. Without him I would never written the thesis, simply because of all the computer problems I had not been able to solve by myself. But more importantly, I am grateful for many interesting discussions about life and logic and all the fun we had together through the last 3 years.

I would like to express appreciations for my co-authors: Nina Gierasimczuk, Witold Kieraś, Juha Kontinen, Marcin Mostowski, and Marcin Zajenkowski whose ideas directly contributed to the thesis.

Special thanks go to Nina for her incredible support. She has not only contributed directly to this research in almost all its stages (from being the co-author of one of the chapters to designing the cover of this book), but first of of all: she is filling every day of my life with joy and love giving reasons for work. My appreciation for her support is beyond any words that I could possibly find.