

## University of Groningen

### Social networks and intergroup conflict

Takács, Károly

**IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.**

*Document Version*

Publisher's PDF, also known as Version of record

*Publication date:*

2002

[Link to publication in University of Groningen/UMCG research database](#)

*Citation for published version (APA):*

Takács, K. (2002). *Social networks and intergroup conflict*. [Thesis fully internal (DIV), University of Groningen]. [S.n.].

**Copyright**

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

The publication may also be distributed here under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license. More information can be found on the University of Groningen website: <https://www.rug.nl/library/open-access/self-archiving-pure/taverne-amendment>.

**Take-down policy**

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

*Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.*

# **SOCIAL NETWORKS AND INTERGROUP CONFLICT**



**RIJKSUNIVERSITEIT GRONINGEN**

**SOCIAL NETWORKS AND INTERGROUP CONFLICT**

**Proefschrift**

ter verkrijging van het doctoraat in de  
Psychologische, Pedagogische en Sociologische Wetenschappen  
aan de Rijksuniversiteit Groningen  
op gezag van de  
Rector Magnificus, dr. D.F.J. Bosscher,  
in het openbaar te verdedigen op  
donderdag 30 mei 2002  
om 14.15 uur

door

Károly Takács

geboren op 8 juli 1973  
te Veszprém (Hongarije)

Promotores: Prof. dr. F.N. Stokman  
Prof. dr. W.B.G. Liebrand

Referenten: Dr. R. Popping  
Dr. A. Flache

Beoordelingscomissie: Prof. dr. G. Bornstein  
Prof. dr. M.W. Macy  
Prof. dr. W. Raub

ISBN 90-367-1610-1  
© Károly Takács

# Acknowledgements

The book you hold in your hand is the product of the research I conducted as a graduate student at the ICS in Groningen between 1997 and 2002. I am grateful for the support I have received from many people during this time. First of all, I would like to thank my supervisors, Frans Stokman, Wim Liebrand, Roel Popping, and Andreas Flache for their valuable, thorough, and inspiring advises. They provided guidance and helped with ideas that enriched this dissertation significantly. As examples I could mention the suggestion of using multilevel analysis for experimental data, the introduction to the team games literature and to the program language Delphi, or the suggestion of a new way of graphical representation of team games. Although I was advised to change the personal pronouns in the text from the old-fashioned plural to singular tense, I kept the plural in order to indicate their close involvement in the research. After all, I remain strongly indebted to them.

I owe my thanks to the members of the Manuscript Committee, Gary Bornstein, Michael Macy, and Werner Raub, who read the dissertation carefully. Justine Horgan and Linda Karr read and corrected the English text. I am thankful for Carlijne Philips, Rita Smaniotto and Ferry Koster who translated the summary into Dutch and for Roel Popping who controlled the translation.

Several people helped me with comments on earlier versions of different parts of the text. For the theoretical part of the research I received suggestions from Thomas Gautschi, Henk Flap, Harry Ganzeboom, Tom Snijders, Wolfgang Balzer and two anonymous referees of the *Journal of Conflict Resolution*. I thank Marcel Lubbers, Carlijne Philips, Rafael Wittek, Marcel van Assen, Alexander Gattig, Christian Steglich, René Torenvlied, Corine Hoeben, Uwe Matzat, Béla Janky, Marieke van der Wal, Rita Smaniotto, Martin van der Gaag, Alinda van Bruggen, Justine Horgan, Annelies Kassenberg, and Jan Kratzer for their comments on the experimental design and/or on the analysis. I would like to thank Sicco Strampel for developing the computer program for the experiments, Jeanette Loos, Hans van Gestel, and Rie Bosman for their practical help. All subjects deserve thanks for participation.

I benefited a lot from discussions with Michael Macy, Brent Simpson, Marianna Klotschko, Robb Willer, Mat Salganik, and Yosimitchi Sato during the winter of 2001 that I spent at Cornell. Special thanks to Michael Macy, who was an excellent host in Ithaca and a major motivating force to proceed with this research.

I am grateful to my roommate, Carlijne Philips and to Csilla Horváth, Zsolt Sándor, Csilla Bartha, Jan Kratzer, Marcel van Assen, Marieke van Onna, Béla Janky, Rafael Wittek, Alessandra Ligi, Justine Horgan, Peter Mühlau, Judit Koczok, Mátyás Hunyadi, Péter Földi, Laura Szabó, Emese Bíró, Tamás Bartus, Philip Wotschack, Rita Smaniotto, Uwe Matzat, Javier Arregui, Norel Rosner, Barend Schipper, and many others who made my years in Groningen enjoyable.

My sister, my parents, and my friends in Hungary also deserve thanks as they continuously supported me despite of the geographical distance. Last but not least, I would like to thank the encouragement I received from my teachers in Hungary, from Zoltán Szántó, György Lengyel, and from László Csontos.

Remaining mistakes are mine.

Nemesvámos, April 2002

Károly Takács

---

# Contents

## 1 COMPETITION AND CONFLICT BETWEEN GROUPS:

<b>Introduction</b>	<b>1</b>
1.1 Aims of this study	3
1.2 Research problem	5
1.2.1 The nature of intergroup conflict	5
1.2.2 Embeddedness and intergroup conflict	6
1.3 Theories of intergroup conflict and peace: an overview	9
1.4 Competitive intergroup relations modeled as team games	13
1.5 Effects of structural embeddedness	16
1.6 Social control mechanisms and intergroup conflict	18
1.7 Temporal embeddedness and intergroup conflict	19
1.8 Research questions	23
1.9 Research methodology: simulations and experiments	25
1.10 Outline of this study	26

## 2 SEGREGATION AND INTERGROUP CONFLICT:

<b>Theoretical developments and analysis of single-shot situations</b>	<b>29</b>
2.1 Introduction	31
2.2 The Intergroup Public Goods game	33
2.3 Interdependencies between neighbors and friends: the structurally embedded IPG game	38
2.4 Social dilemma of a different kind	39
2.5 Model predictions under different decision algorithms	40
2.5.1 Model 1: Dominant strategy rule	41
2.5.2 Model 2: Dominant reply rule	42
2.5.3 Model 3: Local common knowledge	44
2.5.4 Model 4: Expected value calculation	44
2.6 Simulation design	45
2.7 Measures of segregation	46
2.8 Simulation results	48
2.8.1 The effect of group size and neighborhood definition	48
2.8.2 The segregation effect under different decision algorithms	52
2.9 Anomalies: when segregation does not have the predicted effect	53
2.10 Discussion	56
2.A Appendix	58
2.A.1 Model specification using matrix algebra	58
2.A.2 Detailed specification of the expected value calculation (Model 4)	59
2.A.3 Statistical properties of network measures	60



<b>3 SOCIAL CONTROL IN INTERGROUP COMPETITION:</b>	
<b>Experimental evidence</b>	<b>65</b>
3.1 Introduction	67
3.2 Research questions and hypotheses	71
3.3 Experimental design	74
3.4 The model for explaining contribution propensities	77
3.4.1 Main effects: internalized social control	77
3.4.2 Control variables and interaction effects	79
3.5 Method	81
3.5.1 Subjects	81
3.5.2 Procedure	82
3.5.3 Difficulties	83
3.6 Results	84
3.6.1 Contribution rates under different experimental conditions	84
3.6.2 Questionnaire data	86
3.6.3 Analysis of contribution propensities: a simple model	87
3.6.4 The effect of personal characteristics	89
3.6.5 Learning the structure of the game	92
3.6.6 Interaction effects	96
3.7 Discussion	99
3.A Appendix	101
3.A.1 Instructions in the experiment	101
3.A.2 Measurement of risk attitudes	104
3.A.3 Measurement of social orientations	105
<b>4 DETERMINANTS OF PARTICIPATION IN DURABLE CONFLICTS:</b>	
<b>Derivation of hypotheses about effects of temporal embeddedness</b>	<b>111</b>
4.1 Introduction	113
4.2 Research questions	114
4.3 Model of explaining contribution propensities in repeated situations	119
4.3.1 Relation to the model used in the single-shot games	119
4.3.2 Criticalness, reinforcement learning, and intergroup reciprocity	120
4.3.3 Neighborhood effects	128
4.3.4 Control variables and interaction effects	131
4.4 Method of data analysis	134
4.A Appendix: Exact specification of the multilevel model	136

<b>5</b>	<b>CRITICALNESS, REINFORCEMENT AND RECIPROCITY:</b>	
	<b>Experimental evidence of behavior in repeated situations</b>	<b>141</b>
5.1	Introduction	143
5.2	Design of the repeated IPG game experiments	144
5.2.1	Subjects	144
5.2.2	Procedure	144
5.3	Results of the intergroup competition	145
5.3.1	Results by structural conditions	145
5.3.2	Conflict over time	148
5.3.3	Contribution rates over time	152
5.4	Conditional responses	157
5.4.1	Criticalness, reinforcement learning, and intergroup reciprocity	157
5.4.2	Local reciprocity	162
5.4.3	Interactions of structure and time	164
5.5	Questionnaire data	169
5.6	Results of the multilevel analyses	172
5.6.1	The effect of decision heuristics	173
5.6.2	The effect of personal characteristics and other control variables	177
5.6.3	Interaction effects	184
5.7	How beliefs coincide with reality	190
5.8	Summary of results	197
<b>6</b>	<b>SUMMARY AND CONCLUSION</b>	<b>203</b>
6.1	Summary of research questions and results	205
6.1.1	Research problem	205
6.1.2	Structural embeddedness and intergroup conflict	206
6.1.3	Temporal embeddedness and intergroup conflict	210
6.2	Implications and societal relevance	212
6.3	Limitations	216
6.4	Directions for future research	220
6.4.1	Analytical developments	220
6.4.2	Individuals with short-term memory: analysis of two-state Moore machines	221
6.4.3	Computer tournaments and evolutionary selection of successful strategies	223
6.4.4	Fully connected networks	224
6.4.5	Structural dynamics	225
6.5	Walking out of social traps	225
6.5.1	The emergence and collapse of live-and-let-live systems	225
6.5.2	Glory for tolerance	227

6.5.3	Raising new issues: crosscutting cleavages and consociational democracies	228
6.5.4	Assimilation and exit	228
6.5.5	Discriminative sanctioning	229
6.5.6	Epilogue	230
	<b>References</b>	<b>231</b>
	<b>Summary in Dutch</b>	<b>245</b>
	<b>ICS dissertation series</b>	<b>253</b>
	<b>Notations</b>	<b>258</b>