

Contents

<i>Preface</i>	<i>page</i>	ix
1 Introduction		1
2 Preliminaries		5
2.1 Relations		5
2.2 Vocabularies and structures		5
2.3 Terms and formulas		6
2.4 Truth and satisfaction		7
3 Dependence logic		10
3.1 Examples and a mathematical model for teams		11
3.2 Formulas as types of teams		16
3.3 Logical equivalence and duality		29
3.4 First order formulas		37
3.5 The flattening technique		42
3.6 Dependence/independence friendly logic		44
4 Examples		48
4.1 Even cardinality		48
4.2 Cardinality		51
4.3 Completeness		53
4.4 Well-foundedness		55
4.5 Connectedness		56
4.6 Natural numbers		57
4.7 Real numbers		59
4.8 Set theory		60

5	Game theoretic semantics	63
5.1	Semantic game of first order logic	63
5.2	Perfect information game for dependence logic	69
5.3	Imperfect information game for dependence logic	80
6	Model theory	86
6.1	From \mathcal{D} to Σ_1^1	86
6.2	Applications of Σ_1^1	90
6.3	From Σ_1^1 to \mathcal{D}	94
6.4	Truth definitions	100
6.5	Model existence game	110
6.6	Ehrenfeucht–Fraïssé game for dependence logic	121
7	Complexity	134
7.1	Decision and other problems	134
7.2	Some set theory	135
7.3	Σ_2 -completeness in set theory	140
8	Team logic	144
8.1	Preorder of determination	144
8.2	Dependence and independence	148
8.3	Formulas of team logic	150
8.4	From team logic to L^2	158
8.5	From L^2 to team logic	161
8.6	Ehrenfeucht–Fraïssé game for team logic	163
	<i>Appendix: Solutions to selected exercises, by Ville Nurmi</i>	169
	<i>References</i>	220
	<i>Index</i>	223