
Contents

<i>Foreword</i>	<i>page</i> ix
<i>Preface</i>	xi
1 A Theory of Verification	1
1.1 Cooperation versus Confrontation	2
1.2 A Ruritanian Example	3
1.3 About This Book	9
2 Attributes Sampling	13
2.1 From the Atlantic to the Urals	14
2.2 One Class	17
2.2.1 Systems Aspects	21
2.3 Several Classes	23
2.4 Counting Tanks	30
2.5 The IAEA Formula	32
3 Variables Sampling	39
3.1 Environmental Monitoring	40
3.2 Data Differences and Decisions	41
3.2.1 Maximum Sample Size	45
3.2.2 Minimum Sample Size	48
3.2.3 Realistic Sample Sizes	50
3.2.4 Just When ARE Gross Defects Optimal?	53
3.3 Bridging the Gap	55
3.4 Ojos que no Ven, Corazón que no Siente	60
4 Stratified Variables Sampling	67
4.1 Justifying the D-Statistic	68
4.1.1 A Heuristic Test Statistic ...	70
4.1.2 ... And Its Derivation	72
4.2 The D-Statistic, Right or Wrong	79

vi	<i>Contents</i>	
5	Interim Inspection	91
5.1	The Inspector who got Something for Nothing	92
5.1.1	Faites vos Jeux ...	93
5.1.2	... Rien ne va plus	94
5.1.3	The Matrix Game	94
5.2	Unannounced Inspections	96
5.3	The Waiting Game	102
5.4	A Recursive Game	111
6	Global Sampling	117
6.1	Ruritania Revisited	118
6.1.1	Of Dyes and Mustard	118
6.1.2	A Global Sampling Model	120
6.1.3	A Numerical Example	127
6.2	Technical Solutions to Political Problems	131
6.2.1	Dealing with Subjectivity	132
6.2.2	Deterrence	139
6.2.3	The CFE Revisited	142
6.3	Sampling the Globe	146
6.3.1	The $K+1$ -Person Game	146
6.3.2	Transformation and an Example	150
6.4	Das Wort zum Sonntag	151
7	Material Accountancy	153
7.1	Exploiting Continuity	154
7.2	Sensitivity and the Price of Timeliness	157
7.2.1	One Inventory Period	157
7.2.2	Two Inventory Periods	162
7.2.3	Lots of Inventory Periods	167
7.3	Timely Detection	171
7.3.1	Independently Transformed MUFs	172
7.3.2	In the Limit	174
7.3.3	A Simple Sequential Test	176
7.3.4	A CUSUM Test	178
8	Accountancy Verification	181
8.1	A Simple Model	182
8.2	One Inventory Period	190
8.3	Sequence of Inventory Periods	196
9	Inspector Leadership	207
9.1	Honesty is the Best Policy	208
9.1.1	After You, Farmer Hatfield	208

	<i>Contents</i>	vii
9.1.2	Deterrence Quantified	212
9.2	Material Accountancy	217
9.2.1	A Simultaneous Game ...	218
9.2.2	... And Its Leadership Counterpart	221
9.3	Attributes Sampling	224
9.3.1	The Simultaneous Game ...	225
9.3.2	... And The Leadership Game	229
9.3.3	Coexistence of Legal and Illegal Behavior	232
9.4	Variables Sampling	238
9.5	Wrapping It All Up	242
	<i>Appendix</i>	245
	<i>Bibliography</i>	248
	<i>Index</i>	254