

## Contents

	List of plates	page viii
	List of figures	ix
	List of tables	xi
	List of contributors	xiii
	Acknowledgements	xvii
1	Researching the public sphere of biotechnology	1
	MARTIN W. BAUER AND GEORGE GASKELL	
Part I	The framing of a new technology: 1973-1996	
2	Promise, problems and proxies: twenty-five years of	
	debate and regulation in Europe	21
	HELGE TORGERSEN, JÜRGEN HAMPEL, MARIE-LOUISE VON	
	BERGMANN-WINBERG, ELEANOR BRIDGMAN, JOHN	
	durant, edna einsiedel, björn fjæstad, george	
	GASKELL, PETRA GRABNER, PETRA HIEBER, ERLING	
	JELSØE, JESPER LASSEN, ATHENA MAROUDA-CHATJOULIS,	
	TORBEN HVIID NIELSEN, TIMO RUSANEN, GEORGE	
	SAKELLARIS, FRANZ SEIFERT, CARLA SMINK, TOMASZ	
	TWARDOWSKI AND MERCI WAMBUI KAMARA	
3	Media coverage 1973–1996: trends and dynamics	95
	JAN M. GUTTELING, ANNA OLOFSSON, BJÖRN FJÆSTAD,	
	MATTHIAS KOHRING, ALEXANDER GOERKE, MARTIN W.	
	BAUER AND TIMO RUSANEN. WITH THE FURTHER	
	COOPERATION OF: AGNES ALLANSDOTTIR, ANNE	
	BERTHOMIER, SUZANNE DE CHEVEIGNÉ, HELLE	
	FREDERIKSEN, GEORGE GASKELL, MARTINA LEONARZ,	
	MILTOS LIAKOPOULOS, ARNE THING MORTENSEN,	
	ANDRZEJ PRZESTALSKI, GEORG RUHRMANN, MARIA	

RUSANEN, MICHAEL SCHANNE, FRANZ SEIFERT, ANGELIKI STATHOPOULOU AND WOLFGANG WAGNER



vi	Contents	
4	The institutions of bioethics JEAN-CHRISTOPHE GALLOUX, ARNE THING MORTENSEN, SUZANNE DE CHEVEIGNÉ, AGNES ALLANSDOTTIR, AIGLI CHATJOULI AND GEORGE SAKELLARIS	129
5	Controversy, media coverage and public knowledge MARTIN W. BAUER AND HEINZ BONFADELLI	149
	I Public representations in 1996: structures unctions	
6	Traditional blue and modern green resistance TORBEN HVIID NIELSEN, ERLING JELSØE AND SUSANNA ÖHMAN	179
7	The structure of public perceptions CEES MIDDEN, DANIEL BOY, EDNA EINSIEDEL, BJÖRN FJÆSTAD, MILTOS LIAKOPOULOS, JON D. MILLER, SUSANNA ÖHMAN AND WOLFGANG WAGNER	203
8	European regions and the knowledge deficit model NICK ALLUM, DANIEL BOY AND MARTIN W. BAUER	224
9	Pandora's genes – images of genes and nature Wolfgang Wagner, Nicole Kronberger, Nick Allum, Suzanne de Cheveigné, Carmen Diego, George Gaskell, Marcus Heinßen, Cees Midden, Marianne Ødegaard, Susanna Öhman, Bianca Rizzo, Timo Rusanen and Angeliki Stathopoulou	244
Part l	II The watershed years 1996/97: two case studies	
10	Testing times – the reception of Roundup Ready soya in Europe JESPER LASSEN, AGNES ALLANSDOTTIR, MILTOS LIAKOPOULOS, ARNE THING MORTENSEN AND ANNA OLOFSSON	279
11	Brave new sheep – the clone named Dolly EDNA EINSIEDEL, AGNES ALLANSDOTTIR, NICK ALLUM, MARTIN W. BAUER, ANNE BERTHOMIER, AIGLI CHATJOULI, SUZANNE DE CHEVEIGNÉ, ROBIN DOWNEY, JAN M. GUTTELING, MATTHIAS KOHRING,	313



GEORGE GASKELL, PAUL THOMPSON AND NICK ALLUM  Part V Towards a social theory of new technology		Contents	vii
FRANZ SEIFERT, ANGELIKI STATHOPOULOU AND WOLFGANG WAGNER  Part IV The transatlantic puzzle  12 Worlds apart? Public opinion in Europe and the USA GEORGE GASKELL, PAUL THOMPSON AND NICK ALLUM  Part V Towards a social theory of new technology  13 The biotechnology movement MARTIN W. BAUER AND GEORGE GASKELL			
Part IV The transatlantic puzzle  12 Worlds apart? Public opinion in Europe and the USA GEORGE GASKELL, PAUL THOMPSON AND NICK ALLUM  Part V Towards a social theory of new technology  13 The biotechnology movement MARTIN W. BAUER AND GEORGE GASKELL		,	
12 Worlds apart? Public opinion in Europe and the USA GEORGE GASKELL, PAUL THOMPSON AND NICK ALLUM  Part V Towards a social theory of new technology  13 The biotechnology movement MARTIN W. BAUER AND GEORGE GASKELL		WOLFGANG WAGNER	
GEORGE GASKELL, PAUL THOMPSON AND NICK ALLUM  Part V Towards a social theory of new technology  13 The biotechnology movement MARTIN W. BAUER AND GEORGE GASKELL	Part IV	The transatlantic puzzle	
13 The biotechnology movement 37 MARTIN W. BAUER AND GEORGE GASKELL	12		351
MARTIN W. BAUER AND GEORGE GASKELL	Part V	Towards a social theory of new technology	
	13	The biotechnology movement	379
Index 40		MARTIN W. BAUER AND GEORGE GASKELL	
		Index	405



## Plates

9.1	Photo of tomato in Austrian newspaper	page 259
	Source: Reprinted from Salzburger Nachrichten,	
	19 March 1997, © Erwin Johann Wodicka.	
9.2	Photo of 'Belgian Blue'	260
	Source: Helsingborgs bild AB/Scanpix Sverige AB.	
11.1	Dolly, the cloned sheep, facing the world's media	
	cameras	320
	Source: Murdo Macleod, February 1997	
	(M@murdophoto.com).	
11.2	Professor Wilmut contemplating a test tube	322
	Source: Reuters ROS06 25FEB97 file: PP.Medical.exp	).
113	Cover page of Der Spiegel, 3 March 1997	337

viii



## **Figures**

3.1	Themes in the coverage of modern biotechnology	
	across Europe, 1973–1996	page 103
3.2	Actors in the coverage of modern biotechnology	
	across Europe, 1973–1996	106
3.3	Reported locations of modern biotechnology activity	
	across Europe, 1973–1996	109
3.4	Relation between negative or positive coverage of	
	modern biotechnology and public attitude and	
	knowledge across Europe	115
4.1	Ethics as a theme in the press coverage of	
	biotechnology, 1973–1995	131
5.1	Biotechnology as a topic of conversation by 1996	163
5.2	Knowledge gap, 1996, and level of polity activity,	
	1985–1998	166
5.3	Political polarisation and knowledge gap, 1996	167
6.1	Anticipated effects of new technologies in the next	
	twenty years: EU 15, 1996	181
6.2	General expectations about biotechnology in the	
	next twenty years: the balance of opinion in the EU,	
	1978–1996	182
6.3	Expectations about biotechnology in the next twenty	
	years across nations, 1996	183
6.4	The sceptics' arguments	190
7.1	General attitudes to six different technologies	204
7.2	Specific attitudes to six applications of genetic	
	technology	206
7.3	Mean aggregate attitudes across Europe	208
7.4	A structural model representing antecedent factors	
	of attitudes toward biotechnology	213
7.5	Country differences in average attitude extremity	217
7.6	Country differences in knowledge: correspondence	
	analysis, canonical normalisation	219

ix



х

	List of figures	
8.1	Intra-country correlation between knowledge and	
	attitudes to biotechnology in relation to GDP per head	229
8.2	Correspondence analysis of clusters of engagemen	
	with biotechnology and patterns of regional	
	development across Europe	237
9.1	Evaluations and topics mentioned by respondents	
	from ten European countries when asked about	
	biotechnology: correspondence analysis,	
	canonical normalisation	247
9.2		
	textbook knowledge and average level of having heard	
	or read about biotechnology	251
9.3		
	countries, evaluative tone and images	266
12.1	Mean support for five applications of biotechnology:	
	Europe and USA	353
12.2	Number of articles about biotechnology in	
	opinion-leading press, 1984–1996	357
13.1	The biotechnology movement	388
13.2		389
13.3	The technology movement reaching out to the public	391
13.4		392
13.5		
	1973–1996	396
13.6	The movement mobilising milieus in the three arenas	398



## **Tables**

2.1	General issues in the biotechnology debate	page 24
2.2	Definitions of terms	25
2.3	Phases in the debate about biotechnology	27
3.1	Number of articles and distribution across Europe by	
	octade, 1973–1996	102
3.2	Journalistic framing of modern biotechnology in the	
	opinion-leading press across Europe, 1973–1996	111
3.3	Spearman rank order correlations across countries	
	between public perception and knowledge, with	
	positive or negative overall characteristics of the	
	coverage of modern biotechnology, and themes,	
	actor groups and location of activity	114
3A.1	Main characteristics of the research material	120
3A.2		
	biotechnology across Europe: trends, 1973–1996	122
3A.3	Main actors in the coverage of modern biotechnology	
	across Europe: trends, 1973–1996	124
3A.4	Main location of reported activity in the coverage	
	of modern biotechnology across Europe: trends,	
	1973–1996	126
5.1	Knowledge levels and knowledge gaps in different	
	countries	157
5.2	Relevance of biotechnology and level of education	
	by country	159
5.3	Message discrimination by level of education and	• • •
- 1	relevance	160
5.4	Interpersonal communication by level of education	1.64
	and relevance	164
5.5	Knowledge levels by education and message	1.65
<b>5</b> (	discrimination	165
5.6	Knowledge gaps, changes in knowledge gaps,	1.00
	intensity of media coverage, and trends in coverage	168

хi



xii	List of tables	
5A.1	Knowledge indicators by level of education	173
6.1	Profiles of 'blue' and 'green' opponents in five	100
( )	European countries, 1996	186
6.2	Valuation of biotechnology by the 'blue' and 'green'	104
<b>7</b> 1	segments in Sweden	194
7.1	Positive and negative expectations about biotechnology	209
7.2	The positions of European countries in terms of	200
<b>5</b> 0	evaluative consistency	209
7.3	Relation between knowledge and general and specific	210
0.1	attitudes	219
8.1	Public understanding of science in the transition from	226
	industrial to post-industrial society	226
8.2	The variables used in the analysis of the multilevel	
	model groups	231
8.3	The variance explained in the multilevel models	234
8.4	Some European regions classified by economic	
	dynamism	236
9.1	Comparison of the analysis results of the open	
	question responses for six European countries	249
9.2	Main characteristics of data sets and results of analyses	274
11.1	Dolly day by day, 24 February – 5 March 1997	326
11.2	Dolly: type of benefit and risk evaluations	335
11.3	Dolly: the image of science	335
12.1	Three common logics in relation to attitudes to five	
	applications of biotechnology	354
12.2	Distribution of logics for five applications of	
	biotechnology: Europe and USA	355
12.3	Content of press coverage in the USA and Europe	359
12.4	Trust in the US Department of Agriculture and the	
	federal Food and Drugs Administration	373
13.1	The operating principles of the three arenas of the	
	public sphere	394