

Contents

List of Contributors	xvii
Introduction: Socio-Informatics—Practice Makes Perfect? DAVE RANDALL, MARKUS ROHDE, KJELD SCHMIDT, AND VOLKER WULF	1
The Structure of the Book	11
Part I Conceptual Foundations	21
1 Grounded Design: A Research Paradigm in Practice-Based Computing	23
GUNNAR STEVENS, MARKUS ROHDE, MATTHIAS KORN, AND VOLKER WULF	
1.1 Introduction	23
1.2 Design Research: State of the Art	24
1.3 Grounded Design: Foundations and Core Principles	29
1.4 Design Case Studies	31
1.5 Building Concepts by Comparative Analysis	32
1.6 Quality Criteria for Design Case Studies	34
1.7 Sharing Knowledge in the Grounded-Design Paradigm	36
1.8 Building a Portfolio of Design Case Studies	38
1.9 Conclusion	42
2 Practice and Technology: On the Conceptual Foundations of Practice-Centered Computing	47
KJELD SCHMIDT	
2.1 Practice-Centered Computing: The Conceptual Challenge	47
2.2 Conceptual Archeology	54
2.2.1 Technê	55
2.2.2 Praxis	57
2.2.3 The Construction of the Modern Concept of “Practice”	67
2.2.4 The Heritage	73

2.2.5	“Practice” in Moral Philosophy	76
2.2.6	“Practice <i>In Abstracto</i> ”	79
2.3	Conceptual Cartography	83
2.3.1	“Practice”	84
2.3.2	“Technique”	86
2.4	Conclusion	89
3	“Practice Theory”: A Critique	105
	KJELD SCHMIDT	
3.1	“No Such a Thing”	105
3.2	And Yet, There Is Method to It	107
3.3	The Generative Scheme of “Practice Theory”: The Case of Bourdieu	110
3.4	The Challenge of Normative Regularity	112
3.4.1	The Problem of “Sameness”	115
3.4.2	Mere Regularity versus Normative Regularity	118
3.4.3	The Ghost of “Tacit Knowledge” in “Practice Theory”	120
3.4.4	The <i>Expression</i> of a Rule Is Not a <i>Rule</i>	124
3.5	Knowing When To Stop Digging	130
3.6	Collateral Damage: The Concept of “Practice”	132
4	Making Use: Understanding, Studying, and Supporting Appropriation	139
	GUNNAR STEVENS AND VOLKMAR PIPEK	
4.1	Introduction	139
4.2	Get Back to Work: A Brief Survey of the Origins	140
4.2.1	Express Yourself: Appropriation and German Idealism	140
4.3	Learning by Doing: Appropriation and Activity Theory	141
4.3.1	Appropriation and de Certeau	145
4.4	Design in Use: Tailoring, End-User Development, and Appropriation	147
4.4.1	Contingencies, Heterogeneity, and Dynamics: Reasons To Make Software Flexible	149
4.4.2	Making It “Easy To Adapt”: Ways of Designing Flexibility	152
4.4.3	Tailorable Artifacts: Increasing the Technical Flexibility	153
4.5	Making It Work: Appropriation as Collaborative Work	156
4.5.1	Dealing with Breakdowns: A Phenomenology of the Appropriation Situation	157
4.5.2	Make It Together: The Collaboration Pattern	158
4.5.3	Infrastructuring: Appropriation and the Emergence of Infrastructure	159
4.6	Studying and Supporting Appropriation	164
4.6.1	Appropriation and Ethnographic Work	164
4.6.2	Appropriation and Design	166
4.7	Concluding Remarks	170

5	A Bridge Too Far?: Critical Remarks on the Concept of “Infrastructure” in Computer-Supported Cooperative Work and Information Systems	177
	CHARLOTTE P. LEE AND KJELD SCHMIDT	
5.1	“Infrastructural Resources”	179
5.2	“Information Infrastructures” 1.0	182
5.3	“Infrastructural Inversion”	185
5.4	“Information Infrastructures” 2.0	195
5.5	“Cyberinfrastructures”	199
5.6	“Infrastructuring”	203
5.7	Using the Concept of “Infrastructure”: Proceed with Caution!	206
5.8	Implications and Conclusions	207
	Part II Methodological Positionings	219
6	Investigation and Design	221
	DAVE RANDALL	
6.1	Introduction	221
6.2	The “Turn to the Social”	223
6.2.1	The Domain	226
6.2.2	Ethnographic Strategies	227
6.3	Design Research	229
6.3.1	Involving Users	229
6.3.2	Theorizing Design Research	231
6.3.3	The Politics of Design	232
6.4	Conclusion	235
7	Critical Reflections on Participation in Design	243
	INA WAGNER	
7.1	Introduction	243
7.2	Participatory Design: The Political Roots	247
7.3	Participation in What? Unpacking the Concept	251
7.4	Thinking about Power Issues in Participatory Design	256
7.5	New Directions for and Forms of Participation	260
7.5.1	A New “Clientele” for Participatory Designers?	260
7.5.2	Extending Participation to Communities	263
7.5.3	Toward “Infrastructuring”	266
7.5.4	And What about Work?	269
7.6	Thoughts for the Future of Participatory Design: Open Issues	270
7.7	Concluding Remarks	273

8	Integrated Organization and Technology Development: A Critical Evaluation	279
	MARKUS ROHDE AND VOLKER WULF	
8.1	Introduction	279
8.2	The Framework of Integrated OTD	280
8.3	Applying the Framework in Practice	285
8.3.1	OrgTech: Supporting Maintenance Work in a Steel Mill	286
8.3.2	The Iran NGO-CS Project: Development of a Community System for Iranian NGOs	288
8.4	Discussion	292
8.4.1	<i>Vis Inertiae</i>	294
8.4.2	Micropolitics	294
8.4.3	Macropolitics	295
8.5	Conclusion	295
8.5.1	Design-versus-Development Dilemma	295
8.5.2	Asynchronicity	295
8.5.3	Deepness of Intervention	296
8.5.4	Output Guarantee	296
9	Design, Action, and Practice: Three Branches of the Same Tree	303
	GILLIAN R. HAYES	
9.1	Common Historical and Intellectual Traditions	305
9.2	The Practice of Change	306
9.2.1	Generation of Research Questions and Problem Statements	306
9.2.2	Action and Intervention	308
9.2.3	Evaluation/Analysis	308
9.2.4	Reporting Research Results	310
9.2.5	Ensuring Sustainability of Change	311
9.3	AR Views of Practice	311
9.4	The Evolution of Practice	313
9.5	Conclusion	314
10	PRAXLABS: A Sustainable Framework for User-Centered Information and Communication Technology Development— Cultivating Research Experiences from Living Labs in the Home	319
	CORINNA OGWONSKI, TIMO JAKOBI, CLAUDIA MÜLLER, AND JAN HESS	
10.1	Researching the Home	319
10.2	Practice-Based Computing	321
10.2.1	From Participatory Design to Practice-Based Computing	321
10.2.2	The Living-Lab Approach	322
10.2.3	Limitations of “Disposable” Living-Lab Projects	324
10.3	PRAXLABS: Creating Innovative Technologies in Practice	325

10.4	PRAXLABS Projects: Organizational Framing and Setting	328
10.4.1	SocialMedia: Co-Creating a Cross-Platform Entertainment Concept	328
10.4.2	Energy Monitoring: Designing for Energy Practices in the Long Term	333
10.4.3	The City-Quarter Living Lab: Development of a Neighborhood Platform for Elderly Tenants	337
10.5	Insights into Developing a Sustainable PRAXLABS Concept	341
10.5.1	Reusing Methodological Best Practices of Living Labs across Projects	342
10.5.2	Limitations of Comparing Case Study Results	349
10.5.3	Reusing Experiences and Concepts across Fields of Application	352
10.6	Conclusion	355
 Part III Design Case Studies		 361
11	Information and Communication Technology Design in a Complex Moral Universe: Ethnography-Based Development of a GPS Monitoring System for Persons Who Wander	363
	CLAUDIA MÜLLER AND LIN WAN	
11.1	Introduction	363
11.2	Related Work	365
11.3	Overview of the Context Study	368
11.4	Pre-Study: Findings	370
11.4.1	Understanding the Complexities of Caregiving for Persons with Dementia in Institutions	370
11.4.2	Understanding the Complexities of Caregiving for Persons with Dementia at Home	372
11.4.3	Design Implications	374
11.5	Prototype Development	375
11.6	Evaluation: Methodology	377
11.7	Evaluation: Findings	377
11.7.1	The Settings: Two Institutions and a Family	377
11.7.2	Institution A: A Dementia Care Home	378
11.7.3	Institution B: A Hospital Ward	378
11.7.4	A Family Setting	379
11.7.5	Some General Findings across Cases	380
11.8	Discussion	380
11.8.1	Discussion of Design Implications	380
11.8.2	Methodological Reflections	383
11.9	Conclusion	386
12	come_NET: Connecting Computer Clubs with a Community Platform	391
	KONSTANTIN AAL, ANNE WEIBERT, KAI SCHUBERT, MARY-ANN SPRENGER, AND THOMAS VON REKOWSKI	
12.1	Introduction	391

12.2	Background	392
12.2.1	come_IN Computer Clubs	392
12.2.2	Sharing Tools	393
12.2.3	Children as Technology Users/Design Partners	393
12.3	Case Study: come_IN Computer Clubs	394
12.3.1	Research Setting	394
12.3.2	Method	397
12.4	The Empirical Pre-Study for come_NET: Identifying Recurring Challenges in Computer Club Work	398
12.5	The Participatory Design of come_NET	401
12.5.1	The Development Process for come_NET	403
12.5.2	Design of the Communication Function	404
12.5.3	Design of the Artifact-Sharing Function	404
12.5.4	Design of the Networking Function	407
12.5.5	Design of the Privacy Settings	408
12.5.6	Design of the Gamification Function	409
12.6	The Appropriation of come_NET	410
12.6.1	The Use of come_NET in the Club Sessions	410
12.6.2	The Appropriation of the Artifact-Sharing Function	412
12.6.3	The Appropriation of the Communication Function	412
12.6.4	The Appropriation of the Networking Function	413
12.6.5	The Appropriation of the Privacy Settings	413
12.6.6	The Appropriation of the Gamification Function	414
12.7	Discussion	414
12.7.1	Social Setting	414
12.7.2	Interacting with Given IT Infrastructures	415
12.7.3	Gamification	415
12.8	Conclusion	416
13	Enabling Users of Enterprise Systems to Mash Up Resources and Develop Widgets	421
	MICHAEL SPAHN, JULIAN DAX, FAHRI YETIM, AND VOLKMAR PIPEK	
13.1	Introduction	421
13.2	Background	423
13.2.1	Resource Integration Tools	423
13.2.2	Resource Transformation Tools	424
13.2.3	Widget Orchestration Tools	424
13.2.4	Research Gaps	425
13.3	Empirical Investigations in Practice	425
13.3.1	Exploration of Users' Problems and Needs in Practice	425
13.3.2	Observing the Users' Design	427
13.4	Design and Development of the Widget Composition Platform	428
13.4.1	Motivation and Preliminary Remarks	428
13.4.2	Conceptual Layers	429

13.4.3	Architectural Components	431
13.4.4	The WCP User Interface	432
13.5	The Appropriation Study	435
13.5.1	Goals and Methods	435
13.5.2	Evaluation through Use Cases in Practice	435
13.6	Conclusion	440
14	A Fitting Solution	445
	KAORI KASHIMURA, TAKAFUMI KAWASAKI JR., NOZOMI IKEYA, AND DAVE RANDALL	
14.1	Introduction	445
14.2	Method	446
14.3	Background: Plant Construction and Maintenance	447
14.4	The Setting(s)	449
14.5	The Construction Site	449
14.6	The Pipe-Manufacturing Subcontractor	450
14.7	The Storage Site	451
14.8	Conclusion	454
15	Toward Transferability in Grounded Design: Comparing Two Design Case Studies in Firefighting	459
	MATTHIAS BETZ AND VOLKER WULF	
15.1	Introduction	459
15.1.1	Grounded Design, and Design Case Studies	460
15.1.2	The Transferability of Design Case Studies	462
15.2	Design Case Studies in the Domain of Firefighting	464
15.2.1	The Landmarke Project: Navigation and Orientation Support for Firefighters	464
15.2.2	The Koordinator Project: Coordination and Communication Support for Firefighters	468
15.2.3	Building and Extending the Knowledge Base	470
15.3	Comparative Analysis: Results and Findings	471
15.3.1	Autonomy and Monitoring	472
15.3.2	Anticipation and Unpredictability	473
15.3.3	Standardization and Expressiveness	475
15.3.4	Complementation and Substitution	476
15.3.5	Addressability and Awareness	478
15.3.6	Communicative Effort and Risk	479
15.4	Discussion	481
15.4.1	Historicity in Lines of Research	481
15.4.2	Accumulation of Knowledge	482
15.4.3	Personal (Dis-)Continuity	482

15.4.4 Architectural Heritage	482
15.4.5 Barriers of Appropriation	484
15.5 Conclusion	484

Part IV Meta-Research 489

16 Research into Design-Research Practices: Supporting an Agenda toward Self-Reflectivity and Transferability 491

DAVE RANDALL, TOBIAS DYRKS, BERNHARD NETT, VOLKMAR PIPEK, LEONARDO RAMIREZ, GUNNAR STEVENS, INA WAGNER, AND VOLKER WULF

16.1 Introduction	491
16.2 The State of the Art	494
16.2.1 New Forms of Research Collaboration	494
16.2.2 Why “Meta-Research” into “Practice-Based Computing”?	496
16.2.3 The Notion of “Reflective Practice”	497
16.2.4 Doing Ethnography on Projects: The Approach	499
16.3 Ethnographies of Design Case Studies and Projects	502
16.4 Critical Moments: Understanding Collaborative Exchanges within an IT Design Project	503
16.4.1 Dialogs and Discussions	504
16.4.2 Leading and Facilitating Discussions	507
16.4.3 The Role of Emerging Expectations in the Dialog Process	508
16.4.4 The Role of Anticipation and Speculation in Dialogs	509
16.4.5 How Suggestions Emerged in Dialogs	511
16.4.6 Supporting Arguments in Dialogs	513
16.4.7 Discussion	515
16.5 Historically Grown: Understanding the Design Practices of an IT Research Group	518
16.5.1 WiNeMe: A Practice-Based Group of Design Researchers	519
16.5.2 Project Acquisition and Project Work	521
16.5.3 Acquiring a Research Project	521
16.5.4 Writing a Proposal Document	522
16.5.5 Project Work	524
16.5.6 Knowledge Creation and Publishing	525
16.5.7 Publications as a Part of the Dissertation Process	526
16.5.8 Publication Policy of the Project Holder/Funding Agency	526
16.5.9 IT Media Use in WiNeMe	527
16.5.10 Emotional Tensions in Practice-Oriented Work	527
16.5.11 A Comparative Perspective toward Other EUSSET Groups	530
16.5.12 Discussion	530
16.6 Conclusion	532

Epilogue: Socio-Informatics: Intertwining Analytical and Design-Oriented Research into Social Practices	541
VOLKMAR PIPEK, DAVE RANDALL, AND VOLKER WULF	
<i>Socio-Informatics: Establishing a Research Discourse for Practice-Based Computing</i>	545
Technological Challenges	545
Methodological Challenges	546
Epistemological Positioning	547
<i>Index</i>	551