



SITUATED INTERVENTION

SOCIOLOGICAL EXPERIMENTS IN HEALTH CARE

TEUN ZUIDERENT-JERAK

Situated Intervention

Inside Technology

edited by Wiebe E. Bijker, W. Bernard Carlson, and Trevor Pinch

A list of the series appears at the back of the book.

Situated Intervention

Sociological Experiments in Health Care

Teun Zuiderent-Jerak

**The MIT Press
Cambridge, Massachusetts
London, England**

© 2015 Massachusetts institute of Technology

All rights reserved. No part of this book may be reproduced in any form by any electronic or mechanical means (including photocopying, recording, or information storage and retrieval) without permission in writing from the publisher.

MIT Press books may be purchased at special quantity discounts for business or sales promotional use. For information, email special_sales@mitpress.mit.edu.

Set in Stone by the MIT Press. Printed and bound in the United States of America.

Library of Congress Cataloging-in-Publication Data

Zuiderent-Jerak, Teun, author.

Situated intervention : sociological experiments in health care / Teun Zuiderent-Jerak.

p. cm.—(Inside technology)

Includes bibliographical references and index.

ISBN 978-0-262-02938-4 (hardcover : alk. paper)

I. Title. II. Series: Inside technology.

[DNLM: 1. Delivery of Health Care. 2. Sociology. 3. Quality of Health Care. W 84.1] RA418

362.1—dc23

2015001897

10 9 8 7 6 5 4 3 2 1

for with Sonja

Contents

Acknowledgments ix

Introduction: Exploring Intervention in the Social Sciences 1

1 The Stuff of Interventions: Technologies of Compliance in Hemophilia Care 39

2 Situated Standardization in Hematology and Oncology Care 61

3 Situated Standardization and Patient-Centered Care 95

4 The Qualities of Competition: Reconfiguring Health Care Markets 117

5 Sociological Reconfigurations of Patient Safety: Situated Intervention as Multiple Ontologies 155

Conclusion: Situated Intervention and the Ethics of Specificity 177

Notes 193

References 203

Index 229

Series List 233

Acknowledgments

Every scholarly work with one name on the cover performs the myth of single-authored scholarship. Although that myth may currently be well worth defending, acknowledgments are not the place to do so. If all books are networks, with relations and connections spreading in every direction, this is even more so for a book on situated intervention. Moreover, writing this book spanned more years than I wish to recall. That, too, makes it impossible to acknowledge all who contributed to its fruition. Nonetheless, I will attempt—and fail—to do so here.

I start with the care professionals, hospital administrators, policy makers, and patients who were much more than mere “research subjects.” Given our inspiring mix of interests, loyalties, and productive betrayals, I’m particularly sorry that I cannot acknowledge some of the most important contributors by name, having promised them anonymity. I can only hope that all those who were involved in the research that led to chapters 1–3 will feel acknowledged through the small or large changes in their working lives or in their patients’ lives that our shared involvement may have brought about. That would be the least I should hope for, given all the changes our interaction has enabled me to experience in my scholarly life.

Fortunately, the long-standing collaboration with the Atrium Medical Center is exempt from anonymity. I thank everyone there, and especially Nico van Weert, for being committed to quality improvement and to exploring in practice what that actually entails. Equally important for the research that led to chapter 4 was the collaboration with those involved in the Better Faster initiative—especially Marc Rouppe van der Voort, who is simply amazing at handling the logistics of health care, and Marije Stoffer, who turned individuals into a team.

There are many others without whom the book would never have been completed, but only one without whom it would not even have been started. Marc Berg crucially influenced my thinking about the materiality

of intervention, about the role of STS scholars in relation to their fields, and about the possibility of doing health care differently. I am grateful for all that and much more. Extensive collaboration with Roland Bal shaped the book in important ways. His commitment to placing STS firmly in practices of health care governance, while staying part of both (or rather many) worlds, was crucial to the projects on which we collaborated and to many of the ideas developed herein. Ongoing conversations with Casper Bruun Jensen on intervention in STS were central to the overall argument and resonate especially in the conclusion. It was my enormous good fortune to have him as an enduring interlocutor. Stefan Timmermans generously gave extensive feedback on several drafts. The book benefited tremendously from his firm critique and his scholarly acumen.

The Research on IT in Healthcare Practice and Management section and later the Healthcare Governance section of the Institute of Health Policy and Management at Erasmus University Rotterdam provided crucial support and intellectual nourishment for many years. The Unit of Technology and Social Change (Tema T) at Linköping University is proving to be a wonderful new home, and I thank the Research Fellow program of the LiU Board for providing me ample academic freedom and time to complete the book. The work also benefited from scholarly presentation and discussion in several venues, including colloquia at Gothenburg University, at Virginia Tech, at the University of Copenhagen, and at the University of Twente. Although I had to postpone discussing this work till my very last event as coordinator of the Netherlands Graduate Research School of Science, Technology and Modern Culture (WTMC), my many discussions with participants and speakers were great sources of inspiration, for which I am deeply grateful.

I thank Geof Bowker for lovely conversations in which Serres, intervention, and spirituality share an equal place. Mike Lynch was a constant source of inspiring takes on intervention and scholarship, especially there where we ultimately draw slightly different conclusions. I thank Jessica Mesman for nearly two decades of support and inspiration. Gary Downey provided much support and stimulation for this work, both through dialogue and by co-editing (with Joe Dumit) a volume in which an inspiringly wide range of scholars addressed the topic of intervention.

The work benefited greatly from conversations with and feedback from Ingemar Bohlin, Huub Dijstelbloem, Steve Epstein, Lena Eriksson, Kor Grit, Willem Halffman, Hans Harbers, David Hess, Randi Markussen, Brian Martin, Morten Sager, Carsten Timmermann, Brit Ross Winthereik, and Paul Wouters. I thank Emilie Gomart for advising me to book "Appointments

with Foucault, Location: Library” when “urgent” tasks in projects begin to take up most of my calendar space. Chapter 5 grew from a stimulating multi-disciplinary collaboration with Anna Nieboer, Annemiek Stoopendaal, and Mathilde Strating. I thank them for the experience.

I am grateful to Aventis Behring, to an anonymous university hospital, to the Dutch Ministry of Health (through the Better Faster program), to the Netherlands Organisation for Health Research and Development (grant 53430001), and to the Scientific Council for Government Policy (a grant from the Market, State and Society project) for financial support. Ragini Werner of NEEDSer and Paul Bethge at the MIT Press provided excellent editorial support.

Portions of the book draw upon earlier articles, notably Zuiderent-Jerak 2007, 2009, 2010, Zuiderent-Jerak and Jensen 2007, Zuiderent-Jerak et al. 2009, Zuiderent-Jerak et al. 2012, and Zuiderent-Jerak et al. 2015. I am grateful to the publishers for permission to draw upon those articles.

Finally, I thank the person who comes first in so many ways. Sonja Jerak-Zuiderent, I keep on being amazed by the wonderful intertwinement of our personal, spiritual, and professional lives. I could not dedicate this book to you, for it is already ours.

Introduction: Exploring Intervention in the Social Sciences

The philosophers have only interpreted the world in various ways. The point, however, is to change it.

—Karl Marx, 1845

Whoever lacks the capacity to put on blinders, so to speak, and to come up to the idea that the fate of his soul depends upon whether or not he makes the correct conjecture at this passage of this manuscript may as well stay away from science.

—Max Weber, 1918

If you want to truly understand something, try to change it.

—Kurt Lewin, 1951

Dr. Maarten Pols is staring at a spreadsheet with a puzzled look on his face. The file contains an overview of clinical interventions performed on patients with colon cancer. To his surprise, he notices that he and his fellow gastroenterologists are not the only ones who regularly carry out colonoscopies to diagnose such patients. Surgical oncologists often repeat the procedure, using a diagnostic tool that causes discomfort for the patient, increases the risk of infection, and generates extra costs for the hospital. Gastroenterologists deem the tool outdated.

Dr. Pols¹ turns to Dr. Jan Roijers, the surgical oncologist present at this meeting devoted to improving the quality of internal medicine, and asks “If I have already established that it’s bad news, why do the whole thing over again with a static scope?” He seems about to add “as if my examining patients once, with a flexible purging scope, isn’t bad enough.”

Dr. Roijers replies “If you and your colleagues didn’t just tell us it’s bad news, but assessed the exact tumor location, we wouldn’t need to! But after discovering a few times during surgery that a patient should have had radiation therapy before the resection, we started taking our own measures.” Dr. Roijers explains that this form of cancer stops being colon carcinoma when the tumor is located in the

last 12–15 centimeters of the large intestine. In that case it is rectum carcinoma. Whereas colon carcinoma needs swift resection, mortality for rectum carcinoma is substantially reduced by radiation therapy before resection. Dr. Roijers is astonished that Dr. Pols was unaware of the importance of this distinction.

To avoid the possibility that in the future diagnostics will be carried out more than once, the doctors agree that the gastroenterologists will note the tumor's location more precisely. Veronica Vendeloo, a manager responsible for quality in internal medicine, agrees to monitor this change by providing regular updates of the spreadsheet and reporting to the improvement team as soon as double diagnostics reappear. Cluster manager Rob Timmer says he and one of the hospital's directors will present the change during upcoming contract negotiations with a leading insurance company. He hopes that showing how the hospital is reducing disorganization and waste will put him in a good position to contract other price increases that are really needed to improve quality.

Later that day, at a meeting devoted to improving the quality of surgery, Dr. Hans Brakema is discussing ways to reduce waiting times for his surgery hours. A week ago, I had looked at the types of visits that fill up his clinic. Now I asked him whether he really needed to conduct follow-ups on all patients having had small elective procedures. To my mind, such patients are generally happy that their minor discomfort has been fixed and often feel little need to pay another hospital visit, entailing taking time off from work or perhaps arranging for child care. Dr. Brakema responds emotionally: "It would be truly unethical if I plunged a knife into someone's body and never shook their hand afterwards!"

Ingrid Joosen, the quality manager at the meeting, suggests that rather than discussing ethical principles we should match the entries in the outpatient and surgery modules of the hospital information system, to find out how often the surgeon doing the follow-up is actually the one who operated. This proposal is not quite as innocent as it seems, because she knows that the surgeons have begun to use an internal division of labor that is at variance from the professional ethics they espouse. Some surgeons were simply far more efficient in the operating theater; others were better at running surgery hours—a fact not ignored when they faced pressure from hospital management and insurance companies to reduce exorbitant waiting times.

With help from the IT department, Ingrid Joosen produced the figures that we analyzed at the next meeting. It turns out that no more than 5 percent of all operated patients are seen during follow-up by the operating surgeon. We discuss how freeing space in his surgery hours would allow Dr. Brakema to stick to his professional ethics for at least some patients in oncology—for example, those whom the operating surgeon should personally inform about the level of metastasis found and how far a tumor has grown into the surrounding organs. At

present, a potentially laudable normative principle threatens the knife-plunging/hand-shaking match for patients undergoing such complex procedures. We therefore decide to try nurse-led follow-up for small elective procedures. A nurse will call a patient the day after surgery and will go through a pre-defined checklist of complications. If all seems fine, the patient will see the surgeon for follow-up only if he or she wants to. For more complex procedures, patients will still be booked automatically for follow-up, always with the operating surgeon. Alma Heger, the manager of the outpatient clinic, will instruct the doctors' assistants who will make the appointments, and Ingrid Joosen will ask the IT department to set up an indicator measuring the match between operating surgeons and follow-up surgeons and send the results to Dr. Brakema each month.

This book considers the question of how the direct involvement of social scientists in the practices they study can lead to the production of interesting sociological knowledge. The book draws together two activities that are often seen as belonging to different realms: intervening in practices and furthering scholarly understanding of them. The common separation of these domains stems in part from disciplinary self-understandings within sociology that are largely shaped by debates on the need for detached sociological scholarship or its mirror image of engaged social science.² Both sides in the debate draw on the problematic idea that knowing and acting are separate entities (Dewey 1929); they differ only as to which side of this dichotomy they privilege.

Within such a scholarly self-understanding, research that intervenes not with the primary aim of changing practice on the basis of sociological insight, but instead in order to *produce* sociological knowledge, is easily qualified as non-research. This consequence has regularly been made clear to me in the past ten years. When I submitted an article on intervening in the organization of a university hospital to learn more about the dynamics between standardization and patient-centered care, a reviewer for a leading medical sociological journal wrote: "This paper is a scholarly extension of what was in essence a clear-cut applied health services problem. ... The project was not conceived or executed as a research project and the result seems akin to salvage writing." The editor agreed, and the paper was rejected. Apparently, intervening in medical practice didn't qualify as doing sociological research.

Often, other actors in health-care-improvement settings are not averse to such divisions between knowing and acting. Once, at a meeting of managers and organizational advisors in a process-redesign project, I observed how we seemed to be coming up with a kind of standardization different

from the one usually invoked in such projects, and this reconceptualization could help us think differently about the further redesign of care processes. One of the consultants challenged me: "But what we're doing here is applied science, isn't it?" When I failed to produce an instant coherent response to his rhetorical question, he continued: "Well, either we're doing basic science, or we're doing applied science, so this must be the latter." His message was "We're acting here, so please stop this superfluous thinking." Besides making me wonder what "basic sociology of standardization in health care" would look like—probably something concerning a lab with gray OncoMice™ as patients, albinos as care professionals in their white coats and rats (why not?) as managers, acting out purely social relations in a model of a redesigned pathway—I found these events particularly telling because they showed the high level of agreement between academic sociologists and organizational advisors on their division of labor.

In this agreement on who is doing the knowing and who is doing the doing, being a member of a quality-improvement team (such as the ones described above) obviously has little to do with sociology. Intervening in the organization of hospital care is fine as quality improvement, but cannot be a valid scholarly approach to the sociological study of patient-centered care, patient safety, standardization, and health care markets. Yet, as I hope to show in this book, there are two main reasons why such interventions in health care practices may make for interesting practices of sociological inquiry.

The first reason is that, in contrast with what is assumed in the images of objective or basic science invoked by the reviewer and the consultant, philosophers of science such as Ian Hacking (1983) have argued that natural sciences benefited tremendously from broadening their scholarly mode from *theorizing about the world* to *intervening through experiments*. Adhering to an objectivist theorizing image of scholarship in sociology therefore risks losing a mode of knowledge production that has proved highly productive in the natural sciences. Could the sociology of health care markets benefit from a study of the intersection of colonoscopies with fixed scopes, patient safety and suffering, inter-professional coordination, cost reduction, and insurer contracts? Couldn't such a study help us to learn about market ecologies in which competition and professional quality are not necessarily sociological antonyms (chapter 4)? And could I have learned all this without becoming the leader of a national quality-improvement project in which one of my roles was to develop spreadsheets and measurement instruments that would precisely articulate which interventions different professionals carried out at various times? In short, could there be

something to gain *in terms of sociological realism* by letting go of both scholarly objectivism and engaged sociology?

The second reason is that experimental interventions may prove relevant to discussions of the normativity of sociological research practices. Such debates tend to be dominated by a dual fear: on the one hand a fear of over-involvement and loss of epistemic distance and sociological identity, and on the other hand a fear of over-detachment and failure to address the issues that should really matter to us. Experimental intervening does not operate from a detached scholarly position, nor does it aim at implementing a pre-set normative agenda. In a similar vein to the *experimental production of knowledge*, which assumes neither freely theorizing scholars nor applied scientists who implement what is already known, scholarly intervention allows for the *experimental production of normativity* which is a normative stance presuming that scholars are far from detached but may still be surprised by the normative outcomes of experimental interactions. Before we wanted to test and manipulate this normativity in the experimental setting of a project to improve surgical care, neither Dr. Brakema nor I knew that in our normative commitments to follow-up after surgery we failed to make a distinction between different types of oncological or elective surgery. As Susan Leigh Star says (1995, p. 25), “we can’t know about the consequences of including ourselves in the analysis until we try.” Given that an increasing number of sociologically oriented scholars are trying to do just that—include themselves in the practices they study and analyze—intervening in practices as diverse as improving the quality of health care, (workplace) ICT design, evidence production in forensic pathology, or scientific laboratory work,³ I hope, in this book, to help articulate the emerging scholarly practice of intervening to produce sociological knowledge and normativity, and thereby reclaim the notion of intervention from static understandings of objectivity and ethics.

Scholars, Fields, and Their Fraught Relations

The question of how social scientists relate to the actors they study is a fundamental soul-searching topic in many academic disciplines. This discussion goes back at least to Karl Marx, who famously claimed that the scholarly role is not to understand the world but to change it (1845), and to Max Weber, who, in contrast, argued in *Science as a Vocation* (1918–19) that the academic life calls for a position that voluntarily blinds itself to all kinds of utilitarian concerns and political demands. These contrasts regularly figure in debates on the societal role of academics in the popular

media. Here is an example from a 2004 *New York Times* op-ed piece by Stanley Fish: “Marx famously said that our job is not to interpret the world, but to change it. In the academy, however, it is exactly the reverse: our job is not to change the world, but to interpret it.”⁴

Though it is somewhat ironic that Marx’s critique of interpreting philosophers gets turned into a claim for philosophical interpretation, such calls for a distanced social science become all the more vigorous when the organization of scientific work seems to be moving in the opposite direction. With the shift toward project-based funding of scholarly work, “knowledge translation” sections of grant proposals increasingly require scholars to spell out the practical utility of research findings well in advance of a study, no matter how explorative the proposed scholarship may be. Furthermore, relatively new scientific fields such as Action Research, Computer-Supported Cooperative Work, and Participatory Design, and even younger fields such as Experience-Based Design (Bate and Robert 2007), Workplace Studies (Luff, Hindmarsh, and Heath 2000), and Corporate Ethnography (Cefkin 2009), are based on the notion that sociological understandings of the complexity of practices are useful for their improvement. This can easily make it seem as if the contributions scholars make to their fields are largely dependent on their willingness to contribute. Even medical historians, who until recently considered themselves to be relatively far removed from concerns about practical usefulness, find themselves having to live up to calls from funders and colleagues that they have a positive “impact” on the practices they study (Smith 2011). Across the wide range of social sciences and humanities, the calls for both distanced and involved scholarship are becoming increasingly loud.

In response, those who plead for social sciences to influence their fields are often making a moral argument for the importance of coming to an *engaged* scholarly practice (van de Ven 2007; Seifer 2010). This does not merely relate to the Marxist position of actualizing a political position through scholarly work, nor is it directly subject to Weber’s argument that “the prophet and the demagogue do not belong on the academic platform” (1918–19, p. 146). Engagement is regularly presented as a strategy to overcome precisely the dualism of the objectivist and critical modes of scholarly work and produce scholarship that is both rigorous and relevant. Whereas objectivism starts from the premise that science requires a moral prescriptive to be objective, critical theory has specialized in arguing that such objectivism is epistemologically defunct. Deconstructing scientific truth claims and objectivism is, however, no longer the privileged hunting ground of critical theorists; it has become a substantial industry that finds

its most influential patrons in CEOs of oil companies and airlines. Consequently, critical theory is subjected to a “critique of critique,” the argument being that merely critiquing objectivism for its simplified epistemological realism has become risky now that the “truth” of climate change, for example, is strongly contested by economically motivated actors—which leaves critical theorists with strange bedfellows.⁵

Proposing an engaged social science as an alternative to critique claims to provide a way out of this stalemate of objectivism versus critique by moving “beyond” epistemological clashes. This solution may, however, replace scientific objectivism with normative positions for which it is largely unclear how the displayed engagements relate to the scholarly work at hand. A weak connection between engagement and scholarship raises the question whether engagement is not simply activism combined with scientific authority and “rigorous methodology,” which would be a return to the form of objectivism that critical theory set out to challenge in the first place. As Michael Lynch says of this tension (2009, p. 103), “the move ‘beyond’ criticism or relativism tends to replace the discredited objectivism with platforms of epistemic privilege that function in a similar way.” In such cases, engaged scholarship that combines normative positions with the rhetorical authority of scholarly work in fact reverts to objectified (or at least epistemologically privileged) normativity, which is ironic in the light of the original epistemic critiques. It risks ending up in a position that combines the worst of both scholarly worlds: simplified objectivism and sentimental normativity. Pleas for engaged scholarship may therefore once again cause friction with the vocation of social scientists, albeit a friction that is diametrically opposed to the problem Weber proposes. Whereas Weber states that “in the lecture-rooms of the university no other virtue holds but plain intellectual integrity” (1918–19, pp. 155–156), which for him means limiting scholarly work to “self-clarification and knowledge of interrelated facts” (*ibid.*, 152), the possibility that arises when social scientists move “beyond” criticism toward engagement is that social scientists may revert to the very aura of intellectual integrity that critical theory initially set out to challenge. Though recent calls for engaged scholarship seem sympathetic at first and often resonate with the personal concerns of social scientists, they quickly strike at the heart of scholarly self-definitions.

Under-Problematising Engagement

Engagement is obviously not a problematic notion for all actors. The idea that engagement needs problematization is deeply foreign to those who

are not concerned with questioning existing agendas or who do not question epistemic realism. Besides those who set those very agendas, such as research funders, I see two groups of actors who tend to under-problematize engaged scholarship. The first group consists of scholars who adopt problem definitions pre-set by the actors they engage with; the second consists of organizational consultants. These two groups are relevant for debates on the relations between social scientists and their fields, as these actors are regularly encountered by sociologists who become involved in changing the practices they study.

Researchers who do not question epistemic realism typically are committed to contributing knowledge to pre-set problem definitions, rather than taking their research to be about unpacking such definitions and exploring the action repertoires such definitions imply. This work is often conceptualized in terms of finding “factors” and “barriers” that facilitate or hamper organizational or systems change, and these approaches form mainstream scholarship in fields such as Information Systems Research, Innovation Studies, and Health Services Research. Researchers in these fields may address issues of a certain normative weight, such as barriers to transitions toward sustainable energy, the lack of implementation of ICT in public sectors, and insufficient use of patient-safety tools, and may suggest that their work adds an “evidence base” to addressing social issues. This type of research deploys a narrow definition of the “usefulness” of scholarly work that typically produces a legitimacy problem for those scholars with a scholarly attachment to complicating underlying assumptions and addressing issues other than those defined by policy makers. The engagement is toward problem definitions as set by one group of actors (generally fairly influential ones); it runs into problems only when other actors are encountered who do not share this problem definition. Even so, these others are typically defined as a risk factor or an organizational barrier to a privileged change initiative.

While observing a national meeting on improving ways of preventing elderly patients from falling, I attended a plenary talk by a researcher from the National Prevalence Measurement of Care Problems. He presented the facts and figures on falls and emphasized the importance of implementing proven interventions, such as protective hip shorts, that prevent injury when aged adults fall. After the talk, a care professional came up to him and told him quite a different story about these shorts. She had found them to be quite dangerous, especially on psychogeriatric wards. She told him that although the shorts may have been tested on groups of clients not suffering from dementia who fell while wearing them properly, the investigators had

failed to realize that people in psychogeriatric wards often fall *because* they are wearing the shorts—or, rather, not quite wearing them. When clients go to the toilet, she said, they often get confused when they want to get up and find they are wearing a very unusual item of clothing. They have forgotten why they are supposed to be wearing the shorts, and they cannot fall back on a lifetime routine for putting the shorts back on. Consequently, they often get off the toilet with their trousers and underpants draped around their ankles and, not surprisingly, tend to fall, often onto unprotected hips. On hearing about this, the researcher didn't even blink, and I was struck by how little the story affected him. The problem definition, the evidence of proven interventions, and his commitment to reducing falls through implementing proven interventions seemed barely challenged by the complexities of fall-prevention practices.

As I noted above, the second group that tends to under-problematize engaged scholarship consists of organizational consultants. Such consultants are ubiquitous in Western hospitals. In the course of my research I have had many interactions like the one described above. When I tell the consultants about my work on intervention as a mode of sociology, they typically state that they “intervene all the time” in the health care practices we are both involved in. The difference between consultancy and sociology is becoming even more confused because sociologists are increasingly “hired in,” sometimes at rates not all that different from consultants’ fees.⁶ The distinctions are blurred even more because consultancy companies are increasingly employing junior consultants with part-time appointments in academic departments of business or management schools, combining their employees’ aspirations for the academic credits of a PhD with their own interest in researching the complex issues they deal with daily. However, as Gary Downey and Juan Lucena helpfully clarify (1997, p. 120), an important aspect of *sociological or anthropological* hiring in practices is “making visible modes of theorizing that are otherwise hidden, thus possibly legitimizing alternate perspectives ... rooted in the field itself.” This points to the importance of the scholarly aim that sets research problematizing engagement apart from research or consultancy that accepts the problem definitions encountered. The research Downey and Lucena refer to is about *reconfiguring the problem space* that dominates a certain practice rather than about providing evidence or solutions for *pre-defined* problem spaces. Of course, these boundaries—and the boundary work I am doing here—are contested. Surely there is interesting consultancy work that comes quite close to such a definition of its practice, and social-science research that aims to problematize policy assumptions but fails to do so in an interesting

manner. These differences do, however, point to a distinction in the central focus of these modes of relating to the field.

In this sense, I see three practices that are somehow related to social scientists in which 'engagement' is not a problematic term. First, there is scholarly work that pursues a normative or political aim without specifying how this aim relates to their research practice, and risks tapping into epistemic authority for mundane normative claims. Second, some scholars are pursuing agendas set by other actors and trying to provide an evidence base for what works to achieve policy aims. Third, there are organizational consultants who act with, or rather for, the fields that employ them. These three positions are unlikely to be positions that more reflexively oriented social scientists envision for themselves; they are, rather, precisely the kinds of roles that medical sociologists have long tried to avoid in debates about how they relate to their fields. Such debates, which have a substantial history in medical sociology, have gained pertinence as a result of the combination of an increased focus on "knowledge translation" in the funding of social science and claims for engaged scholarship in response to the problems of critique. This has been going on for decades and is part of what Downey and Dumit (1997, p. 10) call "a fundamental change taking place in the academy itself."⁷ The situation social scientists find themselves in today may, therefore, benefit from revisiting these long-standing debates about the tension between societal effects and scholarly aims.

Taking Sides in, or with, Sociology

In the late 1960s, several sociologists discussed the role of social scientists in relation to their fields, focusing on how social scientists were implicated in the study of "social problems." Because postwar sociology (especially that of the Second Chicago School of Sociology⁸) was intertwined with the study of urbanization,⁹ their studies focused on societal issues encountered in housing projects in the early 1950s, and on related broader questions about what it takes to become a drug user, a psychiatric patient, or some other sort of outsider to society. In the sociology of deviance, sociologists analyzed the interactive process by which this outsider status was ascribed and obtained. In doing so they moved away from the commonly held idea that deviance was a quality inherent in individuals of a certain type, and that societal action and rectification were called for. They focused on meaning-making in sociological groups that William Isaac Thomas, one of the main contributors to the First Chicago School of sociological thought, characterized as "social wholes" (1914)—groups that Anselm Strauss later

conceptualized as “social worlds” (1978). As Adele Clark and Susan Leigh Star note (2008, p. 115), some sociologists of the Second Chicago School began combining a “traditional focus on (1) meanings/discourse as related to ethnicity and neighborhood, and (2) the search for identity in the forms of work, practice, and memory.” “This,” Clark and Star continue, “resulted in a sociology that was both material *and* symbolic, interactive, processual, and structural.” Work in symbolic interactionism caused tensions for sociologists who wondered whether their scholarship would serve “deviant communities” by showing that deviance was a label that could be challenged once societal norms were called into question or whether it would benefit research funders who assumed these communities to be the cause of societal troubles. Scholars struggled with their commitments to the cause of helping the “socially indigent” and with the risk that their studies would justify prevailing labeling practices. Lee Rainwater and David Pittman described their struggle this way (1967, p. 361): “If one describes in full and honest detail behavior which the public will regard as immoral, degraded, deviant, and criminal, will not the effect be to damage the very people we hope our study will eventually help?”

Despite these troubles, the substantial societal problems in the housing projects made a more detached sociological position an unattractive option to many. The segmentation of a scholarly vocation—professionally separated from personal affection—was fiercely criticized by many, including John Seeley, who, in direct reference to Weber, wrote:

[O]ne’s profession, one’s calling, vocation, *Beruf*, if it calls at all and so is a profession, calls out and calls upon all else, organizes, dominates, structures and gives point to all else. ... Disjuncture, then, between professional and personal ethic bespeaks the institution of that alienation from the world which would imply a poor professional and a poor profession, or from the person which entails an impoverished professional and an impoverished self. (1967, p. 383)

This conceptualization of the sociological profession resulted in a debate on how sociologists could relate to their fields *without* pretending that their human concerns had nothing to do with their scholarly vocation. Seeley was most evidently radical when he suggested that the role of scholarship was *making* rather than *taking* problems, and that made problems had to be based on an ethical stance. Consequently, for Seeley, sociologists should “know in acceptable fullness not only where we want to go—or want society to go—but how we want it to get there, and how the criticism is to function in the getting of it there” (*ibid.*, p. 387). Seeley justified this proposal by drawing an analogy to medical work and malpractice. As in medicine, it would be “negligent (i.e., morally reprehensible as well as technically

inept) to prescribe without knowledge of certain kinds, and in certain cases ... would establish the fact of criminality, legally, and the basis for professional penalties, socially, and justified serious aversion, morally" (ibid.). Sociologists doing research on social problems without a firm ethical base would be "like a collection of mad doctors" (ibid., p. 388). I will return to this medical analogy later in this introduction, but for now it suffices to note that proposing an ethical base for scholarly action has been and is repeated persistently over time, despite the problems of combining ethical strategies with the epistemic authority that sociologists in the 1960s would usually reserve for the top dogs they criticized rather than for the underprivileged they wished to side with. Some problems that follow from this stance become strikingly clear when Seeley proposes that in order to establish this ethical base he wishes to "gather out a company" of those agreeing with his analysis, and "explore for a common consent in those large principles that have seemed to many to be the meeting ground for all humane and reasonable men, and for others to have the nature and status of 'natural law'" (ibid.). In this manner the sociology of deviance has led Seeley into a rather absolutist—even "natural"—normativity. Despite the "reasonable" ethics Seeley hopes for, its absolutism would inevitably produce its own deviances, which would present sociologists with the dilemma whether to side with deviants or to authoritatively stick to their own (or "nature's") moral order. Fortunately, a somewhat more ambivalent suggestion about the role of the social sciences is found in the debate between Howard Becker and Alvin Gouldner.

In an influential yet widely misunderstood article titled "Whose side are we on?" Becker acknowledges both the impossibility of a value-neutral social science and the need to abstain from simplifying the normative complexity of practices. The general interpretation of this article is that Becker claims that, since value-neutrality is unattainable, sociology should side explicitly with the underdog. He does indeed say that value-neutrality is "imaginary" (1967, p. 239), and also that sociologists "usually take the side of the underdog" (ibid., p. 244). But, crucially, he also states that sociologists ought "to make sure that, whatever point of view we take, our research meets the standards of good scientific work, that our unavoidable sympathies do not render our results invalid" (ibid., p. 246). To ensure that sociologists' taking sides is not at odds with good scholarly work, Becker introduces two related principles: first, sociologists should "avoid sentimentality," meaning that scholars should not shun finding out "what is going on, if to know would be to violate some sympathy"; second, sociologists should study "impartially," meaning that sociological techniques

should be applied so that “a belief to which we are especially sympathetic could be proved untrue.” According to Hammersley (2001, p. 99), Becker thus seems to argue both that “we cannot avoid taking sides and that we should avoid taking sides.”

Furthermore, Becker points out that there is a difference between taking sides and being accused of doing so. Accusations of sociologists’ bias may be due precisely to their applying sociological theories impartially. The social systems studied have what Becker calls a “hierarchy of credibility,” meaning that “people consider the source of any statement or perception, and discount those produced by lower-status people” (Star 1995, p. 1). Consequently, respectable groups have a greater right to define the way things really are than deviant groups. Thus, by giving equal credence to statements of outsiders and to those of responsible officials, impartial sociology of deviance may provoke the charge of bias. Becker also points out that, conversely, sociology that is less impartial because it takes a position in favor of the established order is far less likely to be accused of bias, because that position does not show disrespect for the prevailing hierarchy of credibility. Thus, Becker’s argument is far more nuanced than a simplified plea for pursuing a political position of empowering underdogs through scholarship. Becker argues for a sociology that tends to favor underdog positions, but is careful to avoid sentimentality about such attachments, while realizing that accusations of bias are more likely if it follows the dictum of impartiality instead of uncritically taking sides with prevailing hierarchies of credibility. Becker therefore closes his article with a note on sociological strategy:

We take sides as our personal and political commitments dictate, use our theoretical and technical resources to avoid the distortions that might introduce into our work, limit our conclusions carefully, recognize the hierarchy of credibility for what it is, and field as best as we can the accusations and doubts that will surely be our fate. (Becker 1967, p. 247)

This combination of taking sides, allowing for surprising normativities through avoiding sentimentality, facing the accusations of bias that follow from impartiality, and (importantly) living with the doubt this generates can hardly be seen as a flat-out plea for partisan scholarship. Yet that is exactly what Becker has both been praised and criticized for.

In a 1968 article titled “The sociologist as partisan,” Alvin Gouldner states that sociology comes “to confess its own captivity” and expresses the fear that “the once glib acceptance of a value-free doctrine is about to be superseded by a new but no less glib rejection of it” (p. 103). This nicely

captures the dual fear that underlies much of the debate on the role of the social sciences in relation to their fields: sociologists are either too detached or too involved. This fear seems to stem from defining the problem of sociology as finding a position between two ends of a scale with the mutually exclusive and equally unattractive poles of partisanship and objectivity. According to Gouldner, at one end of the scale sociology's recent "orientation to the underworld" comes with a partisanship that, referring to Marxist ideologies, "has become the equivalent of the proletarian identifications felt by some intellectuals during the 1930s" (*ibid.*, p. 104). At the other end, we find the solution of compartmentalizing social science and morality. "Weber fantasizes [*sic*] a solution in which facts and values will each be preserved in watertight compartments," Gouldner notes, pointing out that "the pursuit of 'truth for its own sake' is always a tacit quest for something more than the truth, for other values that may have been obscured, denied, and perhaps even forbidden, and some of which are expressed in the quest for 'objectivity'" (*ibid.*, pp. 115–116).

That Gouldner places Becker at the end of the scale he calls "empty-headed partisanship" (*ibid.*, p. 116) is the most extreme version of the radical reading of Becker's argument.¹⁰ It seems peculiar in view of the ambiguities in Becker's article,¹¹ and it hardly seems fair to assert that Becker's warning against sentimentality about personal commitments equals "a myth that holds it possible to have a sentiment-free commitment" (*ibid.*, p. 105). Yet Gouldner does raise interesting questions. If simple-minded side-taking is such an unwelcome option, are there any good *scholarly* reasons to conduct research from the underdog standpoint? Is there any chance that following the political commitments of many scholars would make them better *sociologists*? Gouldner sees two advantages in doing so: first, sociologists would be able to learn something about social worlds they themselves and many others know little or nothing about; second, it would give sociologists a new perspective on worlds that they and others assumed they knew a good deal about. Though his dual fear stops Gouldner from working out the answer to this question in more detail, so that it stays at the level of good research as producing more (and perhaps more interesting) knowledge, it is interesting that he tries to realign scholarly and personal commitments.

Gouldner's radical reading of Becker is, however, particularly illustrative of how discussions of the role of social sciences in relation to their fields lead either to polarized debates that juxtapose Marx and Weber or to more nuanced contributions that attract remarkably little attention.¹² Such is the case for this early debate, but polarization has continued to dominate

discussions over the years,¹³ despite marginalized claims to open these matters up for empirical enquiry (Denzin 1968).

One of the more recent manifestations of sociological soul-searching that proposes a split between scholarly engagement and academic professionalism is Michael Burawoy's call for "public sociology." In his influential 2004 presidential address to the American Sociological Association, Burawoy expressed concern that sociology had become caught in a wave of progress that made it shed its "original passion for social justice, economic equality, human rights, sustainable environment, political freedom or simply a better world" (2005, p. 5). "If our predecessors set out to change the world," Burawoy says, implicitly referencing Marx, "we have too often ended up conserving it." (ibid.) To alleviate this loss, Burawoy proposes dividing sociological labor into professional, critical, policy, and public sociology, of which the extremes of detachment and involvement—professional and public sociology—are to be seen as complementary:

We have spent a century building professional knowledge, translating common sense into science, so that now, we are more than ready to embark on a systematic back-translation, taking knowledge back to those where it came from, making public issues out of private troubles, and thus regenerating sociology's moral fiber. Herein lies the promise and challenge of public sociology, the complement and not the negation of professional sociology. (ibid.)

Reviewing the extensive discussion that this call sparked is beyond the scope of this book, but a few things are noteworthy in the light of the history of such debates.

First, the complementary nature of the divided labor *itself* shows that the entire argument is once again structured around a firm separation of sociological *knowing* and sociological *acting*. The first is represented by professional (and critical) sociology focused on developing scholarly legitimacy through scientific expertise (ibid., p. 10). The second is a part of public (and policy) sociology that is concerned mainly with seeking out, engaging, and producing publics that can be helped by such sociological knowledge. As a consequence of this split, many of the responses are fully fed by the double fear this division of labor provokes. The driving force, for Burawoy, is clearly the fear of being too detached. Professional detachment without public sociology results in the failure of sociologists to safeguard society and even humanity that Burawoy sees as "beleaguered by the encroachment of markets and states" (ibid., p. 4). Some publications endorse this fear—sometimes with explicit reference to the Marxist and Weberian histories, as in Charles Derber's call for "public sociology as a vocation" in Burawoy et al.

2004. The critics quickly slide into the opposite fear of being too involved. They argue that sociological knowledge is not good enough yet, or that embarking upon public sociology will so reduce the legitimacy of the discipline that none of its statements will be heard. Arthur Stinchcombe, for example, argues that “we must tend to our job of getting enough truth of the kind than can bear on the future [and] that is so difficult that we should not be distracted much by contributing to public discourse” (2007, p. 135).¹⁴ Meanwhile, Douglas Massey expresses concern that “a reputation for impartiality and objectivity greatly enhances the value of the statements that the [American Sociological] association *does* choose to make on questions of public import [and] provides sociologists with a means to build professional respect and scientific prestige and, hence, the legitimacy to weigh in on debates as individuals” (2007, pp. 147–148).

Second, it is striking that, whereas Gouldner is referenced in the original presidential address, Becker’s “Whose side are we on?” is not merely left out of Burawoy’s argument, it is not even referenced in any of the published symposia in *Social Problems* (February 2004), *Social Forces* (June 2004), and *Critical Sociology* (May 2005), or in its most influential edited volume (Clawson et al. 2007). And even Gouldner is invoked (under Burawoy’s heading THESIS XI: SOCIOLOGIST AS PARTISAN) to argue that “the standpoint of sociology is civil society and the defense of the social” and that “in times of market tyranny and state despotism, sociology—and in particular its public face—defends the interest of humanity” (Burawoy 2005, p. 24). Thus, the debate on public sociology is not informed by Becker’s suggested principles of avoiding sentimentality and studying impartially, or by his warning that partiality is often a matter of ascription rather than of position, or by Gouldner’s suggestion that there may be *professional scholarly* reasons to pursue political commitments. As a consequence, the split between academic credentials and personal concerns proliferates, as does sociologists’ dually fearful relationship with the worlds they study.

Siding with Sociology or Medicine

Discussions of the relation of *medical* sociology to the field of medicine also have a long history, and have in fact been quite defining for the shift from *medical* sociology to the sociology of *health and illness* (Timmermans and Haas 2008). In one of the texts that established medical sociology as a field, Robert Straus distinguished between sociology *of* medicine and sociology *in* medicine, asserting that the former must be carried out at a distance from medicine and that the latter can be pursued in collaboration (1957, p. 203).

With the by now easily recognizable fear of being too engaged, Straus suggested that the two are incompatible and that sociology *in* medicine may jeopardize the sociologists' professional identity: "If the sociologist begins to talk like a physician, he may eventually come to act like a physician and even to think like a physician. If he sacrifices his identity as a sociologist, he loses the unique contribution he can make to medicine." (ibid., p. 204) Still, this contribution to medicine *was* an important aim for Straus, who spent most of his professional life working at a medical school. (See Straus 1999.) He therefore also expressed the other fear of being too detached: sticking to "pure sociology in the face of demands for interpretation (and there is need for pure sociology in medicine at the right time and place) will be misunderstood, ignored or rejected" (Straus 1957, p. 204).

Despite Straus's dual warning, it seems as if his colleagues initially picked up his first recommendation especially, to protect professional identity. As Stefan Timmermans and Steven Haas point out, the editors of early editions of the *Handbook of Medical Sociology* asserted that "there are no reasons for the development of unique or special theories in medical sociology" and that "medical sociology, like all sociology, is concerned with social relationships and social processes, and its theoretical base must of necessity be that of general sociology" (Freeman, Levine, and Reeder 1963, 1972, 1979, pp. 506, 476, 467). According to those editors, medical sociology was firmly about sociology, not medicine. According to Timmermans and Haas (2008, p. 661), they tried to shield the discipline from "evolving into an applied discipline, especially a social science subservient to clinical medicine." Margaret Gold strongly pointed out this risk in a paper titled "A crisis of identity: The case of medical sociology." Gold analyzes a series of publications in medical sociology and concludes that most studies are highly influenced by medical value assumptions and that funding structures make sociologists dependent on clinicians in collaborative research. She proposes "strengthening the identity of medical sociology *as* sociology" (1977, p. 166) to ward off the threat of the identity crisis that follows from a lack of professional autonomy. This selective reading of Straus's warning seems more recently to have resulted in a tendency that is quite opposite to what Gold noticed in the late 1970s. In their review of publications of the last decade in *Sociology of Health and Illness*, Timmermans and Haas note that "social scientists have become mainly interested in the experience, culture, and social structuring of illnesses while bracketing the biological bedrock of disease" (2008, p. 660). This development has brought sociology closer to an underdog medical sociology than Gold could have held possible and produces new tensions between medical sociologists and clinical practice.¹⁵

Annette Lawson reports on a medical professor at Stanford who advised students that “they might like to avoid the ‘anti-medicine elective’[:] my course in Medical Sociology” (1991, p. 592). In line with Becker’s hierarchy of credibility, such advice could stem from the way a high-status medical profession can downplay medical sociologists, which is the explanation Lawson seems to adopt when she writes that “if being on the side of the underdog has led to unbridled attacks on medicine (defined as doctors) then that has clearly operated against sociologists” (ibid.). If medical sociology fails to take the more substantive position that Timmermans and Haas propose, the distance between medicine and sociology may result in a medical sociology that would exclude “clinical endpoints” and thereby the “normative purpose of health care,” because of which medical sociology becomes “clinically unanchored” by ignoring “what often matters most to patients and health care providers” (2008, p. 659).

This does not mean that there are no substantive *problems* with the proposed closer alignment of medical sociology to the fields it studies. For example, after Stefan Timmermans and Marc Berg said in the epilogue to their 2003 book *The Gold Standard* that the study of the improvement of quality and safety in health care provides refreshing opportunities for various strands of the social sciences to gain societal relevance, Casper Bruun Jensen responded that this would allow the patient-safety *agenda* to be set solely by existing institutions, such as the US Institute of Medicine, leaving medical sociologists no other option than to take “the critical stance” or to enter “a vibrant future, in which medical sociologists are reconfigured as system designers” (2008, p. 321). According to Jensen, this would confine medical sociologists to contributing to better design of systems with pre-set agendas, even when their research shows interesting complexities that problematize policy assumptions underlying such agendas.¹⁶ Debates about the role and the identity of the social sciences are not merely professional turf wars over autonomy and accountability; they are substantive debates on crucial scholarly attachments. The idea that one is either committed to sociology or engaged with issues in the practices studied may preclude exactly what scholars have to add *sociologically* to these practices and what these practices have to offer for sociology.

From Engagement to Intervention

As discussions of the role and identity of social scientists reveal, the notion of “engaged social science research” presents scholars with questions about what to engage with and about how such engagements relate to prevailing

scholarly aims. It also poses a legitimacy problem for scholars wanting to articulate their theoretical engagement in rethinking pre-defined problem definitions, who may be told that their work “risks being consigned to quietism or, worse, mere academic professionalism” (Lynch 2006, p. 820). The very term “engaged research” raises the question of what the social sciences could possibly be when they are *not* engaged.¹⁷ In this book I explore modes of social science’s involvement that do not suffer from these problems of engagement. I do so by focusing on a notion that is generally reserved for the practices that sociology studies: intervention.

According to the philosopher of science Ian Hacking, intervention is a crucial concept for analyzing what scientific practices entail. In his influential 1983 book *Representing and Intervening*, Hacking challenges the importance of theorizing, which often is seen as *the* dominant scientific style aimed at coming to a good representation of nature.¹⁸ He devotes the second half of the book to the importance of various forms of experimental intervening in the sciences. Scientific theorizing, especially because of the undue attention it has received in the philosophy of science, is one of the reasons why debates on realism and relativism have become so fruitless.¹⁹ “Realism,” Star explains (1995, p. 9), “is the position that ‘there really is a there out there, and it’s true in some absolute sense.’” “Relativism,” Star continues, “holds that truths are relative to a place, time, or person (often a historical situation or geographic/cultural location).” According to Hacking, a reappraisal of experimental intervening in scientific knowledge production is crucial for addressing the philosophical problems of realism more productively. “Engineering, not theorizing,” Hacking writes near the end of his book (p. 274), “is the best proof of scientific realism about entities. My attack on scientific anti-realism is analogous to Marx’s onslaught on the idealism of his day. Both say that the point is not to understand the world but to change it.”

Whereas Marx has been quoted to legitimize pursuing *political* aims through engaged scholarly work, and (by Stanley Fish) to show that such aims do not suit epistemic attachments, Hacking invokes Marx to pursue the *epistemic* aim of coming to pragmatically reliable knowledge. Intervening is not *the result* of engagement or of theorizing; rather, it is a *conditio sine qua non* for coming to a form of knowledge that Hacking calls “uncontentious realism” (ibid., p. 131). This notion of realism does not assume that entities really do exist and that the sciences can describe them objectively, which caused so much confusion in earlier debates on the scholarly role; rather, it assumes that “reality has to do with causation and our notions of reality are formed from our abilities to change the world” (ibid., p. 146).

Hacking thereby makes clear that there may be reasons that have little to do with engagement for pursuing an academic strategy of intervention: scientists intervene to explore and produce robust forms of knowledge. In this sense, Hacking refers in an unusual way to Marx, and in fact seems to end up at a point that is generally ascribed to Kurt Lewin, who supposedly wrote that in order to truly understand something one should try to change it.²⁰

In line with this more agential understanding of intervening as the production of reality, Hacking's understanding of experimental knowledge production is quite different from common-sense understandings of the scientific experiment. *Instantiae crucis* (or, as later rendered, "crucial experiments") are often depicted as a way to test two theories that have competing truth claims with the aim of providing the conclusive answer as to which theory is correct. Drawing on the writings of the seventeenth-century philosopher of science Francis Bacon, Hacking shows how this is *not* what Bacon has to say about experiments. For Bacon, *instantiae crucis* should be considered "fingerposts that are set up where roads part, to indicate the several directions" (Hacking 1983, p. 249). Experiments are therefore not devices with which to bring interpretation to an end, but rather devices with which to point to possible directions and their consequences, realizing that the fingerposts may well be misleading (ibid., p. 251). Experimentation, according to Hacking's reading of Bacon, is thus not a device for doing away with reflexivity, but rather a device for heightening it. Thus, whereas mainstream philosophy of science considers the experiment a controlled *demonstration device* to show that certain facts are "self-evident" (as Steve Shapin and Simon Schaffer argue in their 1985 book *Leviathan and the Air-Pump*), Bacon's understanding of the experiment was far more tentative and creative. In this sense, Bacon's ideas on scientific experimentation turn out to be much closer to current understandings of experimentation within the social sciences that emphasize its emerging improvised, surprising, generative side.²¹

Hacking's plea for the notion of experimental intervening to analyze what the natural sciences do is relevant to the present discussion of the role of the social sciences in relation to their fields. If scientific practices intervene for reasons other than societal engagement, I propose, the notion of experimental intervention may help to overcome social scientists' fear of either being too detached from normative concerns or being "merely useful" and co-opting with practice—the dual fear that is usually fanned when the quotation from Marx is employed critically or favorably. Interestingly, Hacking and others who point out the importance of experimental intervening for *understanding* how scientific knowledge production can be

studied without getting stuck in naive notions of realism seldom explore the implications of their conclusions for scholarly practices in their *own* fields, be they philosophy of science or the social sciences and humanities at large. According to Hacking,²² although ‘intervening’ is a crucial notion for studying the natural sciences, in his analysis it remains largely limited to the natural sciences, which implies that for other scientific practices the analogical-hypothetical style of reasoning—theorizing—remains largely unquestioned. This is somewhat ironic, not only in view of Hacking’s sharp observation that “harm comes from a single-minded obsession with representation and thinking and theory, at the expense of intervention and action and experiment” (ibid., p. 131) but also because Hacking does in fact allude to the importance of intervention for the future of philosophy: “Natural science since the seventeenth century has been the adventure of the interlocking of representing and intervening. It is time that philosophy caught up to three centuries of our own past.” (ibid., p. 146) In that sense, this book, by exploring the interlocking of representing and intervening in the social sciences, tries to do for sociology what Hacking proposes for philosophy.

Not only is this practice of reserving “intervention” for the sciences that are studied commonly encountered among philosophers of science; it is equally commonly encountered in medical sociology. In that scholarly domain, interventions are generally seen as clinical procedures carried out by health professionals, rather than as a mode of knowledge production for medical sociology. Medical, clinical, or surgical interventions belong to medicine and not to the sociology of health and illness. Since sociological interventions in health care practices form the empirical material in this book, working with the notion of interventionist scholarship is a dual attempt to relieve research practices of the moral weight of “engagement,” simultaneously reclaiming some of the ideas about “where the action is” from the practices social scientists deal with.

Intervention can, of course, be seen as a crude notion, especially when mistakenly depicted as if it presupposes a contextual “outside” separate from a practice into which the intervention is “inserted,” while the “outside” remains untouched and unchanged by the act. This critique defines intervention as “the idea of a one-way causation” and “the bringing forth of a completely new order through overt use of power” (Nickelsen 2009, pp. 10–11). Though etymologically the Latin meaning of *inter* (between) and *venire* (to come) may indeed lead one to define intervention as a unidirectional action, in this book I stay closer to the ideas about intervening that Hacking explored for the sciences, and for which he continues to

draw on seventeenth-century philosophy of science. According to Hacking (1983, p. 149), Francis Bacon “taught that not only must we observe nature in the raw, but that we must ‘twist the lion’s tail’, that is, manipulate our world in order to learn its secrets.” In that sense, revitalizing the notion of intervention for the *social* sciences could contribute to the “Back-to-Bacon movement” Hacking hopes to initiate. The involvement that follows from the explicit aim of changing a practice in order to learn from it, Hacking argues, has consequences for the proof that gets produced and, I would add, for scholars’ resultant normative attachments. In this sense, intervention is diametrically opposed to implementation.

From Engagement as a Resource to the Topic of Situated Intervention

An important consequence of the shift from “engaged” to “intervening” social sciences is that sociologists no longer claim privileged access to a moral resource that justifies their engagement; rather, they unpack intervention as an empirical topic. This topic/resource distinction, which is central to ethnomethodology’s program (Garfinkel 2002), was originally worked out in relation to the use of formal structures in sociological analyses. According to Harold Garfinkel and Harvey Sacks (1970, p. 337), “natural language serves persons doing sociology, laymen or professionals, as circumstances, as topics, and as resources of their inquiries furnishes to the technology of their inquiries and to their practical sociological reasoning *its* circumstances, *its* topics, and *its* resources.”²³ This implies that, as Michael Lynch puts it (1993, pp. 148–149), the “intelligible theoretical position” is not found “‘outside’ the fields of practical action studied in sociology.” When applied to social structures this means that, although the practices that produce and reproduce structures are topics of sociological analysis, *conceptions* of social structures should not be used as explanatory external resources.

The topic/resource distinction is usually deployed for the purpose of shifting the mode of analysis of the same concept, as in the case of “social structure.” This is, however, somewhat problematic in relation to the notion of “engagement” since its very characteristic is that it draws on external resources. “Engagement” is therefore a particularly tricky notion for my aim for this book. Rather than apply the topic/resource distinction to the notion of engagement itself, I prefer to avoid altogether this notion that is so often employed *as a resource* and move on from engagement as a resource to the topic of intervention.²⁴ Applying the topic/resource distinction to “engagement” and “intervention” bypasses the dual fear and identity crises

that interventionist social scientists otherwise incur, by relocating the question of normativity firmly *in* the practice of doing intervention. Whereas engaged social sciences tend to position normativity as part of the engagement resource to be drawn upon, interventionist social sciences locate normativity in the many attachments that actors in the field, including scholars, sort out in practice (Jensen 2007). This does not imply that social scientists' first fear of over-detachment need raise its head, but it does imply that their own attachments are neither completely pre-defined and based on partisanship nor valid only when justified by a scientific methodology.

Shifting from engagement as a resource to the topic of intervening means that interventions become situated. By this I mean, following Lucy Suchman, that interventions, rather than focus on actualizing an engaged agenda, should be part of "the context of particular, concrete circumstances" (1987, p. viii). As Suchman clarifies in response to some misreadings of her groundbreaking work on the relation between plans and situated actions, this does not imply that situated actions are merely reactive to the practice encountered or "synonymous with spontaneous or improvisational [actions]" (2007, p. 16). Nor should situatedness be interpreted as "involving a kind of erasure of context, as implying that action happens *de novo*, without reference to prior histories" (*ibid.*). It is worth reiterating these points here to prevent a similar misreading of situated intervention as entailing purely locally contingent experiments that are sociologically and normatively ahistorical. In contrast, situated intervention is a scholarly approach in which intervening aims at producing sociological knowledge by situating such interventions in sociologically unpacked normative complexities. My aim for this book is to contribute to the study of situated intervention as a topic in the social sciences.

Engagement and Situated Intervention in Science and Technology Studies

Though the role of the social sciences in relation to their fields is debated in many academic disciplines, in this book I focus on the contribution that the field of Science and Technology Studies (STS) can make to the larger discussion. Without essentializing STS (a young, dynamic, nomadic, interdisciplinary, and inherently incoherent field), I believe that many of the debates in this field provide great leverage when one is trying to pre-empt the two mirror images of simplified epistemic realism and normative standpoint absolutism. In this sense, drawing on the field of STS is helpful when one is conceptualizing the terrain that lies in between more "contentiously realist" streams in sociology that work with problem definitions set by

influential actors and standpoint emancipatory fields such as participatory action research.²⁵ On the other hand, not all of this potential leverage has been fully deployed in STS to reflect on the issue of intervention, so the aim of this book allows me to both draw on and contribute to STS debates on the topic of intervention. I hope this makes my conceptualization relevant for scholars in the field, as well as for scholars facing similar questions in the social sciences and humanities at large.

Intervention has been a topic on the STS research agenda for several decades at least. STS shared its interest in demystifying science and technology by combining fieldwork and anti-positivism with the work of American symbolic interactionists (Star 1995, p. 6). One form this demystification took was the work of researchers in Edinburgh's "strong programme in the sociology of knowledge" in the 1970s. One of its tenets was that sociology should be "symmetrical in its style of explanation," meaning that "the same types of cause would explain, say, true and false beliefs" (Bloor 1976, p. 5). In the ensuing decades, STS researchers noticed that applying this principle to the study of technoscientific controversies entangled them in their objects of study in unforeseen ways. Marginalized actors in scientific disputes embraced STS analyses to such an extent that scholars felt captured by them. As a consequence, scholarly non-intervention seemed an impossibility, since "an epistemologically symmetrical analysis of a controversy is almost always more useful to the side with less scientific credibility or cognitive authority. In other words, epistemological symmetry often leads to social asymmetry or nonneutrality." (Scott, Richards, and Martin 1990, p. 490) Or, as Steve Woolgar noted about a decade earlier, "notwithstanding the declared intentions of the sociologist, the proffered alternative account will be heard as a comment on the adequacy of the original account" (1983, p. 254), and therefore, as David Hess noted (1997, p. 161), "the party with the lower credibility may seize a neutral account because it implicitly levels the playing field." Though the consequences of social scientists' being captured by those with lower credibility were different than earlier sociological experiences that faced challenges by credible actors, Becker's notion of hierarchies of credibility would have been helpful to make the experiences of Pam Scott, Evelleen Richards, and Brian Martin come as less of a surprise.²⁶ Since being captured *was* a surprise, it sparked the insight that the notion of the scientist as a detached observer of epistemic practices was not merely worthy of critique in the natural sciences; it equally created stimulating tensions for STS researchers studying technoscientific controversies.²⁷ Consecutive publications on this topic pointed out that intervention was not something that could be avoided, nor was it a problem as such; rather,

repeating sociological debates, some STS researchers argue in these publications that the field should take positions, while others saw this situation as an empirical domain worth exploring²⁸ (cf. Blume 2000).

The notion of scholars as “captives” was developed in relation to the study of scientific controversies. Perhaps as an artifact of such controversial settings, it has been conceptualized as the aim of one homogenized party—this time the underdog instead of the establishment—to hold captive the scholar who was strengthening their cause.²⁹ These early studies focused on the “unintended consequences” of scholarly work and were not intentionally trying to intervene in the fields that captivated it, let alone carry out research that was commissioned to change a certain practice. Studies of controversies have been popular in STS, following from the assumption that sociological enquiry is ideally located in controversial events, since this is where the scholar gains insights into otherwise undisclosed mechanisms (Cambrosio and Limoges 1991; Rip 1986). As Michel Callon, Pierre Lascoumes, and Yannick Barthe put it (2009, p. 26), controversy “organizes the more complete investigation of possible states of the world.” However, if we consider that controversies may produce *crucially different networks* than those one would encounter for more complex issues and multiple positions (Bal 1998; Halffman 2003; Mulkay, Potter, and Yearley 1983), this would have far-reaching consequences for a notion of intervention that draws heavily on controversial settings. And, as Brian Martin points out, there may be many cases in which the relationships between social scientists and other actors are nothing like the unidirectional experiences analyzed in the early 1990s, and therefore, ‘capture’ is “perhaps the wrong word since it connotes unwillingness on the part of the captured,” and “‘mutual enrolment’ or ‘joining forces’ are more appropriate descriptions” (1996, p. 265). The question these alternative notions raise is, of course, “Joining forces with what or whom?”

The notion of “joining forces” again presumes to some extent that social scientists have to “take sides” with pre-defined parties. In the wake of claims that STS has depoliticized its “roots in activist struggles” (Martin 1993)³⁰ and its base in “radical social movements: radical science, feminism, women’s health, civil rights, environmental justice, peace and so on” (Hess 1997, p. 157), the emergence of interventionist approaches is often positioned as a reply to the critique that constructivist studies provide “no grounds for making a decision about what course of action one ought to take” (Hess 2001, p. 236). This is the problem of what critics have called “the normative deficit of STS” (Keulartz et al. 2004, p. 12), or “the normative vacuum of STS” (Fuller 1999, p. 27). It comes down to the idea that this

field is better suited to *studying* differences than to *making* a difference and that it “suffers from normative confusion, an incapacity to pronounce on whether it likes or dislikes what it so perspicuously sees” (ibid., pp. 27–28). Challenged by such criticism, Hess posits a “second generation” of ethnography-inspired STS researchers who tend “to be more oriented toward social problems (environmental, class, race, sex, sexuality and colonial)” (2001, p. 236). This move—highly similar to the partisanship Becker was accused of and to the idea that the social sciences can move “beyond” relativism by becoming “engaged,” if only scholars cared to shift their orientation—seems to provide researchers with the normative purchase to “develop ways of intervening in their field sites as citizen-researchers and [make] their competence applicable to policy problems” (Hess 2001, p. 239). In this sense, Hess sees intervention as the analysis of how practices “might be *better* constructed, with the [criteria] of ‘better’ defined explicitly and their contestability openly acknowledged as both epistemological and political” (ibid., p. 240). Hereby, intervention becomes reattached to activism and social movements, to the Science and Society movement of the 1960s (Rose and Rose 1969), and to such related emancipatory initiatives as the Dutch (and, later, European) science shops of the 1970s and the 1980s (Wachelder 2003; Leydesdorff and Ward 2005). The normativity of STS research is hence relocated in the connection to its activist roots, much as partisanship was read into Becker’s argument as a solution for an overly detached sociology. These ties between intervention and activism are further strengthened in a proposal for a “*rapprochement* ... between the more academic and the more activist wings of STS” (Woodhouse et al. 2002, p. 297). In that proposal, Edward Woodhouse, David Hess, Steve Breyman, and Brian Martin reflect further upon the high value that many of the STS researchers they call “reconstructivist” ascribe to explicitly normative components of scholarly work, and connect their focus on intervention to grassroots issues and the democratization of the design of technologies.

This approach rejoins intervention and engagement as a resource, thereby also reintroducing the problems and ironies that face engaged scholarship. Taking the position of “citizen-researchers” risks reenacting normative standpoints rather than opening them up and preventing what Becker called “sentimentality.” It thereby moves away from what Hess himself elsewhere calls “‘good ethnographies’ [that] frequently interrogate or complexify the taken-for-granted, such as common sense categories employed by social scientists, policy makers, activists and scientists” (2001, p. 239). Critical STS may therefore first re-instantiate and then critique the usual suspects, rather than empirically unpacking, complexifying,

and re-situating normativities. This move could easily be seen as a typical case of one step forward and two steps back, in the light of the problems of the notion of “engaged” scholarship and the fact that it presumes that STS researchers have privileged “access to the ‘larger picture’ of social and institutional developments” (Jensen and Lauritsen 2005, pp. 67–68).

But just as there is a wide range of proposals to deal with these questions about the relation between social scientists and their fields, the rapprochement between activism and scholarly work is only one of the modes of intervention pursued in STS. An alternative follows by drawing lessons from how intervention is actually done in the practices that are sociologically studied. Studying how intervention is enacted in sciences that Hacking says have a three-century head start in analyzing the interlocking of representing and intervening may produce interesting insights for intervention in STS. And the same applies to more recent studies on how intervention gets shaped in medical practices.

In his 1997 book *Rationalizing Medical Work*, Marc Berg analyzes the difference between textbook versions and ethnographic accounts of the place and form of interventions in medical decision making. Whereas textbook versions of decision-making practices assume that clinicians first come to a diagnosis that then leads to a decision for a particular clinical intervention in practice, Berg compellingly shows that treatment often begins as a way of tentatively exploring which of the diagnoses that share similar signs or symptoms may be correct. Proposing that diagnosing is a separate phase of decision making and a largely cognitive process is highly similar to assuming that analogical-hypothetical reasoning is the primary style of knowledge production in the sciences (Berg 1997, pp. 20–31). Interestingly, Berg’s analysis of medical interventions *as part of* diagnosing resonates with Hacking’s analysis of intervening as an important form of knowledge production in the sciences.

Turning such findings reflexively upon the social sciences is important to understand the inappropriateness of Seeley’s comparison of social-science interventions that lack a clear diagnosis to social scientists as “a collection of mad doctors.” It helps us understand that such interrelating of diagnosing and intervening is *precisely what practicing medicine is often about*, which brings home the point that intervention in the social sciences does not have to be attached to a pre-defined “diagnosis” of what the normative problem is, which is then followed by a social-science intervention. Intervention is reflexively connected to the very production of this diagnosis, or, as Hacking would put it, intervention is about the production of proof about the practice. Drawing on such studies, STS could thus contribute

productively to a conceptualization of situated intervention that avoids textbook simplifications. Taking a clinical-*practice* approach to intervention rather than a clinical-*model* approach would help STS to acknowledge, as Edgar Schein put it (1987, p. 29), that “*intervention precedes or is simultaneous with diagnosis*, and that improved diagnosis results from early efforts to intervene.” Indeed, the interventions of STS researchers may be better off not being preceded by a sentimental attachment to a grassroots diagnosis of social problems.

Blurring the distinctions between diagnosing and intervening means that the question of relating to the field social scientists study moves away from a dichotomous understanding of power and knowledge that has dominated the debate on social-science interventions for decades. Structuring this debate along this power-knowledge nexus is what Casper Bruun Jensen and Peter Lauritsen (2005, p. 60), following Gilles Deleuze (1991), call a “badly posed problem.” They observe two aspects that would qualify the problem as badly posed: it leads to a highly limited range of intellectual positions left for scholars, and this delimits scholarly imagination about the possible relations they could have with their fields. The power-knowledge nexus can be traced back to the work of Marx and Weber and runs through the Becker-Gouldner and public sociology debates and also through some discussions of the normative positioning of STS researchers. It provides infinite degrees but only one kind: though it provides unlimited variations on the *scale* of partisan and objective scholarship, the *relation* between the ends of the scale is always one of less or more of these two extremes.

The alternative figuration of the problem space proposed by STS studies—that of interlocking representing (or diagnosing) and intervening—is largely inspired by feminist studies of science and technology, since feminist STS has done important work in reconfiguring the knowledge-power nexus. Whereas feminism started as a “movement about exclusion—‘we need more women in *x*’” (Star 1995, p. 23), thereby reifying rather than problematizing gender categories, with “women in *x*” as “favorite career-building strategies for some” (ibid., p. 24), feminist STS is radically different in that its primary aim is “the ongoing project of unsettling binary oppositions, through philosophical critique and through historical reconstruction of the practices through which particular divisions emerged as foundational to modern technoscientific definitions of the real” (Suchman 2008, p. 140). In relation to the objective knowledge/subjective power binary opposition that paralyzes discussions of the role of sociologists in relation to their fields, one of the most important notions in feminist STS is what Donna Haraway (1991b) calls “situated knowledges.” Rather than contrast

partiality with objective knowledge, Haraway states that “objectivity turns out to be about particular and specific embodiment, and definitely not about the false vision promising transcendence of all limits and responsibility” (ibid., p. 190). In this sense the notion of objectivity as contradictory to scholarly attachments can be seen as “unlocatable, and so irresponsible” (ibid., p. 191). Being situated, conversely, is needed precisely to accomplish an uncontentious form of objectivity. Or, as Haraway puts it, “the only way to find a larger vision is to be somewhere in particular” (ibid., p. 96).

In this figuration of the problem of the relationship between the social sciences and their fields, the question is not “Whose side are ‘we’ on?” The question is how located and accountable scholars can create productive partial connections (Strathern 1991) with their fields. The issue is not related to keeping sufficient analytical distance, as again this reduces the matter to a distance scale, leaving nothing but yet another “more/less” answer—“believing in this epistemological chimera closes off many sorts of possible connections” (Jensen and Lauritsen 2005, p. 72). The question is, rather, how scholars can have sufficient connections to a practice they relate to (Latour 1988b) and whether they can “come up with ingenious solutions to the problem of how to become interesting enough for practices to care about” (Jensen and Lauritsen 2005, p. 72).³¹ Neither engagement nor objectivity seems to provide the best opportunities for doing so. Rather, the “project of materialized refiguration” (Haraway 1997, p. 23), in which social scientists experiment with different ways of “figuring together, or *configuring*” (Suchman 2008, p. 153) modes of sociological scholarship and the practices studied, may prove fruitful in this regard.

This proposal to pre-empt many of the problems of objectivity and partisanship in discussing the relationship between the social sciences and their fields hardly leads to a set of guidelines or methodology for how to do this research. The point is that scholars learn to “take quite seriously that knowledge is always obtained concretely, and for that matter can never be ensured from the outside, but only through interested interaction” (Jensen and Lauritsen 2005, p. 69). Despite recent attempts to argue the contrary (Barad 2011), such practices of creating material refigurations, as proposed in the work of Haraway, cannot be methodically “followed,” because Haraway’s “idiosyncratic, hybrid style of speech and writing ... cannot be easily reduced to a package of methodological guidelines” (Prins 1995, p. 362). For these reasons, this approach calls for empirically detailed explorations of new ways of interlocking representing and intervening, for the uncontentious and “agential realism” (Barad 2007) these afford, and for continuous

reflexive commitment to the produced situated knowledges and the worlds that scholars generate in intra-action (ibid.) with their fields.

Despite such calls for materialized refiguration, the ways in which STS explores its own implications in world-making is still somewhat limited. I think this is one domain in which STS and social sciences at large still have much to gain from reflexively drawing on the scientific and health care practices studied. STS authors interested in experimenting with refigurations analyze “productive *metaphors*” (Law and Urry 2004, p. 390, emphasis added) that come from complexity theory, plead for “deliberate efforts to structure *inquiry, description, and explanation* to serve social purposes” (Woodhouse et al. 2002, p. 298, emphasis added), “argue for a strategic *dialogue*” (Kember 2003, p. ix, emphasis added) between critics of scientific practices and scientific practitioners, or claim that there is a need to organize “public *debates* on standards” (Callon 2004, p. 131, emphasis added) for the technologies that shape our world. It is striking that many STS scholars restrict themselves to largely *discursive ways* of intervening—with discursive defined in a fairly pre-Foucauldian non-material sense—despite the importance this field has ascribed to other more material modes of intervention in scientific and health care practices (Latour 1988a).

In contrast to these proliferating examples of discursive sociological interventions, the specific approach I develop in this book explores the material reconfiguration of medical practices as a mode of situated intervention. This approach is inspired by the idea that sociological interventions may gain much from getting involved in changing the organization and technologies of medical practice, through which technology can serve as “a crucial, never fully predictable and potentially creative force” (Berg 1998, p. 478). The focus in STS on discursive interventions is surely influenced partly by the kinds of technoscientific practice studied: experimental materialized refigurations may work better in the development of medical information and communications technology than in nuclear energy. Also, I risk enacting another “great divide” here between the material and the discursive,³² which would be one of the binary oppositions feminist STS would be eager to unsettle. And yet the preference for discursive interventions is not merely asymmetrical with STS sensitivities for the importance of material agency. It often seems to produce a more static notion of normativity that presents “engaged STS” as a resource in such debates. (See, e.g., Fisher 2011.) The turn toward organizational and material explorations of interventionist social-science practices that I put at center stage in this book differs in the sense that such interventions are situated in the normative

complexities that are empirically unpacked as well as in the material agency that is part of the refiguration of practice.

Consequently, and in line with the aim of investigating new ways of creating partial connections, this type of research comes with a somewhat unusual set of research practices.

Doing Situated Intervention

The research on situated intervention upon which I draw in this book spans more than ten years. In January of 2001 I joined the Institute of Health, Policy and Management at Erasmus University Rotterdam, pursuing an interest in STS research on (or as) intervention in medical practices. Since then, I have been involved in the development of a hemophilia care center at a large university medical center (2001–2002), in the construction of standardized care pathways in a large hematology/oncology ward at a university hospital (2003–2004), in the development of standardized care pathways for oncology care and elective surgery in a national quality-improvement collaborative that contributed to health care reform aimed at introducing a system of regulated competition (2004–2007), and in the interventionist evaluation of a national collaborative for improving the quality and safety of long-term care (2006–2009). In this period the “methods assemblages” (Law 2004) I worked with ranged widely. In the first three projects, my role was that of a change agent, doing commissioned research, hired to act as project leader for reorganizing care practices. Here the idea was not that an otherwise static practice required transformation, as change is a state that is “already and always in progress” (Blomberg, Suchman, and Trigg 1996, p. 260); it was to articulate and address particular problems in the organization of care. Since such research is not uncommon in the academic institute that employed me, health care organizations and professionals were accustomed to many researchers from this institute carrying out research that was useful to them in one way or another—for example, health economists doing cost-effectiveness studies of clinical trials of innovative treatments. This familiarity of care professionals with the institute and the similarity these actors perceived between my projects and other forms of “useful scholarship” gave the problem of access to medical practices a very specific twist. Although my STS colleagues often had difficulties convincing doctors of the relevance of their obscure ethnographic tendencies,³³ these projects were based on invitations from organizations that viewed this institute as a resource for organizing care practices. In the fourth project, my role was somewhat traditional, as the evaluation of the

quality-improvement collaborative addressing long-term care was funded by a research grant by the Netherlands Organization for Health Research and Development (ZonMw). One of the conditions we negotiated was to contribute explicitly to the collaborative: we would run feedback and reflection sessions with those carrying out the improvement projects.

My involvement with developing the hemophilia care center entailed spending about 300 days in the hospital doing ethnographic observations, conducting interviews with nurses, doctors, doctors' assistants, ward managers, pharmacists and patients, having meetings with ICT department staff, care professionals, and care managers, and giving presentations to professionals and patients. Sometimes my observations took me to national meetings of internists-hematologists specialized in hemophilia treatment, to other hemophilia treatment centers in the Netherlands and in the UK, or to international conferences such as the World Federation of Hemophilia Forum. At other times it took me to the ICT department of the hospital or into the homes of patients. The main STS co-researcher on this project was Marc Berg, then the department chair who was directing the research.

Based on the work for the hemophilia care center, the management and medical staff of the hematology/oncology outpatient clinic that the hemophilia care center was part of, asked our department to analyze some persistent problems they faced and to get involved in the needed organizational changes. Though the hemophilia care center is a relatively small unit for one rare disease, the hematology/oncology outpatient clinic and treatment center is a large unit of the university hospital. Annually, approximately 1150 new outpatients come to the clinic about 11,000 times for follow-up consultations. The treatment center administers chemotherapy about 2,100 times and blood transfusions about 2,600 times a year.

Care professionals and patients dealt with many overcrowded outpatient clinics. Clinics ran very late, and at times the treatment center was so jammed that patients had to receive chemotherapy while sitting on a stool, rather than reclining in a chair that can be adjusted to a horizontal position in case the patient reacts badly to the treatment.

In 2003 I started a three-month study of the working problems in the outpatient clinic and treatment center. Combining ethnographic and quantitative approaches, I analyzed the interactions taking place behind the appointments counter, in the consulting room, in the treatment center, in the waiting rooms, and in staff meetings. I carried out 19 days of participant observation; held semi-structured interviews with resident staff, junior doctors, operational management, research nurses, medical secretaries, and medical social workers (23 respondents in all); held focus-group

project meetings (twice); gave interactive presentations to nurses (twice), to hematologists (once), to oncologists (once), and to other clinic personnel (twice); and quantified problems by analyzing data from the hospital information system (HIS).

Analyzing HIS data, I could calculate to what extent the clinics were running late, how many patients were scheduled although no regular slot was available (double bookings or over bookings), whether clinics started on time, whether there was an overall balance between the capacity of the clinics and the number of visiting patients, how often doctors canceled clinics, and the variability of these parameters for individual doctors. I also quantified the increase in the number of treatments given at the treatment center in recent years and the distribution of treatment over the various days of the week in the previous three months. I did not look into the rate of "no-shows," as this may be a common problem in wards for less urgent care, but on this ward patients were so ill that they seldom stayed away without notification.

After the first phase of the study, I wrote a proposal for changes that might be made on the ward. When the medical and organizational management approved this analysis and its directions for a solution, over a period of about ten months I spent most of my time on the ward coordinating working groups for hematology and oncology, which were chaired by a professor of hematology and an associate professor of oncology who both served as medical coordinators.³⁴ These multi-professional groups consisted of the medical coordinators, resident staff members, nurses, doctors' assistants, research nurses, the management of the secretaries, the operational manager of the ward, and me. We met once a week to discuss the progress of the project and to sketch out standardized care trajectories for the large majority of patients. These pathways focused on the interventions that group members proposed to deal with the issues I had identified in the first phase.

In the final two months of the project, I evaluated it by again using a mixed-method design, interviewing professionals and analyzing data from the HIS. (The latter was much less cumbersome the second time, since important parameters were now translated into automatically generated indicators.) In all, I spent about 200 days doing research on the ward in this period. As I mentioned above, Marc Berg was the other main contributor from my department to this project. Substantial contributions also came from Roland Bal, another STS colleague from the institute.

For the third project, I had the dual role of project leader of the national process-redesign project of the quality-improvement collaborative and

advisor to one of the large participating teaching hospitals. The national part of the collaborative involved approximately 40 improvement projects in 16 hospitals, and my main work consisted of organizing a series of national conferences for improvement teams, combined with site visits and interviews with project leaders and quality managers (32 in all), which added up to about 180 days of interventionist research. Additionally, I spent about 150 days at the teaching hospital observing care practices, attending meetings of improvement teams, interviewing staff, and attending “project reviews” chaired by the managing and medical directors of the hospital. Initially, Marc Berg was a board member of the national quality-improvement collaborative. Around the halfway point of the study, he was succeeded by Roland Bal.

This study was later extended with a round of follow-up interviews to see how developments in one of the participating hospitals had progressed. I interviewed a specialist nurse, the innovation manager of the hospital, a medical specialist who also chaired one of the specialisms in the hospital, and a division manager. Next, I interviewed a purchaser for the largest insurer in this hospital’s catchment area, the development manager, an economic expert at the Dutch Healthcare Authority, and the expert at the Dutch Association of Insurers responsible for developing the purchasing guide for hospital care that insurance companies use.

When evaluating the quality-improvement collaborative for long-term care, I worked with other STS researchers and with quantitative sociologists from the Institute of Health Policy and Management. The latter used surveys to collect outcome data on three levels of the collaborative: the thematic projects in the collaborative, the improvement teams in organizations, and individual clients in those organizations. I carried out participant observations of sixteen working conferences and six meetings of project teams who run the thematic projects in the collaborative, and I interviewed project leaders and health policy makers coordinating the program. With this research design, we intended to analyze the results in terms of effectiveness that the teams seemed to be achieving and, at the same time, to consider what the “results” might be indicating or hiding. I was further involved in meeting with project team leaders and program management in feedback sessions. Because of the more distributed nature of this program, and because I was not involved in changes at the level of health care organizations but rather at the level of the national improvement program, this research was more spread out over time. I must admit that this was a welcome change, allowing for more space to conceptualize work from this

and previous projects. Roland Bal was principal investigator for this project; Mathilde Strating and Anna Nieboer were the other main collaborators.

John Law has defined method assemblages as “a combination of reality detector and reality amplifier” (2004, p. 14), and that definition fits the research practices I worked with quite well. Just as it proved problematic to separate diagnosis and intervention in medical work, it was rarely self-evident how findings resulted in interventions, or how interventions produced new knowledge, or even how to separate the two. Intervention turns out to be a highly layered practice that is part and parcel of doing fieldwork, as doing fieldwork in itself begins to interlock representing and intervening. Challenging this dichotomy proved crucial for staying susceptible to opportunities for the initial interlocking of representing and intervening during the period of fieldwork. The co-development of intervention and fieldwork also ensures that situated intervention is not about the implementation of plans, as such implementation would be a problem-ridden route for interventionist researchers, who—like any other actor in the setting—have a limited capacity for carrying out changes according to their wishes (Nickelsen 2009, p. 11). The tension of striving for change while realizing that it will turn out differently than intended cannot be resolved. This makes the role of intervention researchers quite like that of other actors in the field of medicine, and gears this set of method assemblages toward striving for normatively situated interventions—which turn out differently than had been intended.

Structure of the Book

The chapters deal with various experiments with research practices on situated intervention. Though the cases and analyses may seem to progress from empirically detailed practices of the individual actions of patients in a health care setting, moving up to the level of standardization of care trajectories for hospital wards, and further up to market developments and patient-safety programs in national governance arrangements, I do not analyze them as proceeding from a “micro” to a “macro” level. Such ethics of scale would re-introduce the notion that the social has a pre-existing “top” and a pre-existing “bottom” (Latour 1997). I do, however, explore how partial connections have a *history* that is crucial to enabling certain modes of intervention. Although ethnographically inspired STS research does at times have difficulties dealing with the historic depth of sites of knowledge production, “since in general ethnographies deal in very thin time slices” (Bowker 2005, p. 13; also see Engeström 1990), it is precisely

this longer time span of analysis and intervention that creates options for different interactions with practices studied.³⁵ Interventions on the hematology/oncology ward were not possible without the partial connections created on that ward during the project for the hemophilia care center, and my becoming the leader of a national project for developing standardized care trajectories in 16 hospitals would have been unthinkable without my connections to the ward of the university medical center and to some highly esteemed professors of hematology and oncology there. Likewise, the projects were enabled by their connections to my institute. Such associations sometimes interact in quite unforeseen ways; I will return to the history and the interaction of partial connections in the concluding chapter.

In chapter 1, I explore situated intervention in the practice of the hemophilia home treatment carried out under the responsibility of a hemophilia care center. In this case, interventions are strongly connected to STS and sociological research on the issue of compliance and to studies that focus on making work visible. Non-compliance is often conceptualized as a problem in the literature on quality of care, resulting in a plethora of equally unsuccessful compliance enhancement initiatives and cognitive interventions. Medical sociologists and STS researchers question the aim of full compliance, recognizing that patients have to live in many different worlds simultaneously—worlds that at times may challenge their role of patient. By shifting their focus from trying to understand irrational non-compliance to studying achievement of compliance in practice, medical sociologists and STS researchers have opened-up interesting acting space for situating compliance enhancement initiatives in the complexity of patients' life-worlds. In chapter 1, I explore what happens when such insights are translated into material and organizational interventions (for example, by introducing monitoring devices for particularly risky settings) and relate these translations back to the possible gains for sociology and for practices of hemophilia care.

In chapter 2, after discussing the value of experimentally scrutinizing patients' compliance with treatment regimes, I turn to the study of clinicians' compliance with standards. With a rhetorical structure similar to that of the debate about patients' compliance, the low adherence rates of health care professionals to clinical guidelines is often seen by health scientists and policy makers as highly problematic. However, as in the debate on patient adherence, the common "solutions" to improve the success rate of implementation initiatives tend to leave the epistemological status of aggregated medical knowledge untouched. Such initiatives tend to be practically cumbersome, politically desensitized, and conceptually problematic.

They are caught up in a dichotomous understanding of universal clinical knowledge and particular patient characteristics, which is not a productive rendering of the problems encountered in clinical practice. To explore a different notion of standardization, I analyze the experimental interventions in a health-care-improvement project at a hematology/oncology outpatient clinic of the same university hospital. I show that this project articulates the value of situated standardization for both clinical practice and the integrated pathway movement, rather than following the above-mentioned extremes (striving for full rationalization of medical practice and celebrating complexity that boycotts standardization).

In chapter 3, I explore the consequences of situated standardization for the relation between standardization and patient-centeredness. In the literature of medical sociology, “standardization” and “patient-centered care” have been positioned as perfect conceptual opposites. I explore the specificities of this opposition, the limitations of the two concepts, and how a reconceptualization of both concepts could lead to their pragmatic commensurability. Drawing empirically on the development of patient-centered care pathways, I suggest that situated standardization can be helpful for redefining patient-centeredness from a change in professional attitude toward “wholeness,” or a procedural focus on patient participation, to a material and organizational characteristic. This proves particularly important because other definitions of patient-centeredness can allow doctors to exert unprecedented power over their patients. If the issues patients, care professionals, and organizations face are put at center stage, care can be made patient-centered in more substantial, contestable, and located ways.

Chapter 4 deals with how sociology can get involved in the enactment of emerging health care markets. Drawing on research on the development of situated standardization through process redesign in a national health-care-quality collaborative, I analyze the possibilities for enacting health care markets as driven by value rather than by cost-saving. Though initially this project was largely successful, I propose that sociological interventions in the construction of markets may be more risky than some scholars suggest. These markets turned out to “work” quite well despite the poor quality of the market devices that I developed to help frame it as value-driven. Later, when the quality of these devices improved, the market focused more on cost-saving. Since many scholars in social studies of markets have argued for the importance of market devices in framing values, it seems important to sensitize the sociological interventions to prevailing *market regimes* and market practices as “forms of the probable” (Thévenot 2002) that are

highly consequential for the acting space of social scientists in performing markets.

Sociological interventions in national improvement programs are also the topic of chapter 5, where I focus on a sociological evaluation of a large program devoted to improving the care of older adults. In the evaluation, I initially faced a narrow definition of “useful” research according to which we were supposed to discover the factors that support or hamper the implementation of existing policy agendas. I show how such definitions are unfortunate, since they undo the capacity to complexify the taken-for-granted conceptualizations of the object of study that is crucial for practices of situated intervention. As an alternative to this definition of “usefulness,” I explore a focus on multiple ontologies in the making when studying patient safety. Through this focus, social scientists become involved in refiguring the problem space of patient safety, the relations between research subjects and objects, and the existing policy agendas. This role gives social scientists the opportunity to focus on which practices of “effective care” are enacted through different approaches to dealing with patient safety and what their consequences are for the care practices under study. I explore how this focus on multiple ontologies of safety open up new ways for intervention in the quality-improvement collaborative, but also point to the limitations of evaluation as intervention.

In the conclusion I return to the questions raised in this introduction and to the consequences of situated intervention for the normativity of sociological scholarship. I claim that sociologists do not face a normative deficit in the practices they study, but that they have to find new ways of dealing with a normative surfeit, to which they have to relate their own sociological attachments. The strength of situated intervention in elucidating this normative complexity proves fruitful for coming to what I call an *ethics of specificity*. Such an ethics turns a more flexible normativity not into a normative vacuum for sociology, but into a healthy practice of adopting its sociological responses to the practices studied. In this way, sociology not only has more to offer to the practices it studies, but also has more to learn from them.

References

- Agency for Healthcare Research and Quality. 2011. National Guideline Clearinghouse, U.S. Department of Health and Human Services (<http://www.guideline.gov>).
- Allen, Davina. 2009. From boundary concept to boundary object: The practice and politics of care pathway development. *Social Science & Medicine* 69: 354–361.
- Amsterdamska, Olga. 1993. Surely you are joking, Monsieur Latour! *Science, Technology & Human Values* 15 (4): 495–504.
- Argyris, Chris. 2005. Double-loop learning in organizations: A theory of action perspective. In *Great Minds in Management*, ed. Ken G. Smith and Michael A. Hitt. Oxford University Press.
- Arrow, Kenneth J. 1963. Uncertainty and the welfare economics of medical care. *American Economic Review* 53 (5): 941–973.
- Asdal, Kristin, and Ingunn Moser. 2012. Experiments in context and contexting. *Science, Technology & Human Values* 37 (4): 291–306.
- Ashmore, Malcolm. 1989. *The Reflexive Thesis: Wrihting Sociology of Scientific Knowledge*. University of Chicago Press.
- Ashmore, Malcolm, Michael Mulkay, and Trevor J. Pinch. 1989. *Health and Efficiency: A Sociology of Health Economics*. Open University Press.
- Ashton, Melinda, and Linda Richards. 2003. *Nothing About Me Without Me: A Practical Guide for Avoiding Medical Errors*. Trafford.
- Aspden, P., J. M. Corrigan, J. Wolcott, and S. M. Erickson, eds. 2004. *Patient Safety: Achieving a New Standard for Care*. National Academies Press.
- Bal, Roland. 1998. Boundary dynamics in Dutch standard setting for occupational chemicals. In *The Politics of Chemical Risk*, ed. Roland Bal and Willem Halffman. Kluwer.
- Bal, Roland, and Femke Mastboom. 2007. Engaging with technologies in practice: Travelling the Northwest Passage. *Science as Culture* 16 (3): 253–266.

- Barad, Karen. 2007. *Meeting the Universe Halfway: Quantum Physics and the Rntangle-ment of Matter and Meaning*. Duke University Press.
- Barad, Karen. 2011. Erasers and erasures: Pinch's unfortunate "uncertainty principle." *Social Studies of Science* 41 (3): 443–454.
- Barber, Benjamin. 1984. *Strong Democracy: Participatory Democracy for a New Age*. University of California Press.
- Barry, Andrew, Georgina Born, and Gisa Weszkalnys. 2008. Logics of interdisciplinarity. *Economy and Society* 37 (1): 20–49.
- Barry, Andrew, and Don Slater. 2002a. Introduction: The technological economy. *Economy and Society* 31 (2): 175–193.
- Barry, Andrew, and Don Slater. 2002b. Technology, politics and the market: An interview with Michel Callon. *Economy and Society* 31 (2): 285–306.
- Barry, Christine, Nicky Britten, Nick Barber, Colin Bradley, and Fiona Stevenson. 1999. Using reflexivity to optimize teamwork in qualitative research. *Qualitative Health Research* 9 (1): 26–44.
- Bate, Paul, and Glenn Robert. 2002. Studying health care "quality" qualitatively: The dilemmas and tensions between different forms of evaluation research within the U.K. National Health Service. *Qualitative Health Research* 12 (7): 966–981.
- Bate, Paul, and Glen Robert. 2007. *Bringing User Experience to Healthcare Improvement: The Concepts, Methods and Practices of Experience-Based Design*. Radcliffe.
- Becker, Howard S. 1967. Whose side are we on? *Social Problems* 14 (3): 239–247.
- Becker, Howard S. 2008. The Chicago School, So-called. <http://home.earthlink.net/~hsbecker/chicago.html>.
- Bender, J., E. Ammenwerth, P. Nykänen, and J. Talmon. 2006. Factors influencing success and failure of health informatics systems. *Methods of Information in Medicine* 45 (1): 125–136.
- Benhabib, Seyla. 1996. *Democracy and Difference: Contesting the Boundaries of the Political*. Princeton University Press.
- Benzing, Jozien. 2000. Bridging the gap: The separate worlds of evidence-based medicine and patient-centered medicine. *Patient Education and Counseling* 39: 17–25.
- Berdick, Edward L., and Vicky W. Humphries. 1994. Hospital re-engineers to improve patient care. *Health Care Strategic Management* 12 (11): 13–14.
- Berg, Marc. 1997. *Rationalizing Medical Work: Decision-Support Techniques and Medical Practices*. MIT Press.
- Berg, Marc. 1998. The politics of technology: On bringing social theory into technological design. *Science, Technology & Human Values* 23 (4): 456–490.

- Berg, Marc, and Els Goorman. 1999. The contextual nature of medical information. *International Journal of Medical Informatics* 56: 51–60.
- Berg, Marc, Yvonne Meijerink, Marit Gras, Anne Goossensen, Wim Schellekens, Jan Haeck, Marjon Kallewaart, and Herre Kingma. 2005. Feasibility first: Developing public performance indicators on patient safety and clinical effectiveness for Dutch hospitals. *Health Policy* 75 (1): 59–73.
- Berg, Marc, Wim Schellekens, and Ce Bergen. 2005. Bridging the quality chasm: Integrating professional and organizational approaches to quality. *International Journal for Quality in Health Care* 17: 75–82.
- Berg, Marc, and Stefan Timmermans. 2000. Orders and their others: On the constitution of universalities in medical work. *Configurations* 8: 31–61.
- Bijker, W. E. 1995. *Of Bicycles, Bakelites and Bulbs: Towards a Theory of Sociotechnical Change*. MIT Press.
- Birkmeyer, John D., Therese A. Stukel, Andrea E. Siewers, Philip P. Goodney, David E. Wennberg, and F. Lee Lucas. 2003. Surgeon volume and operative mortality in the United States. *New England Journal of Medicine* 349 (22): 2117–2127.
- Blomberg, Jeanette, Lucy Suchman, and Randall Trigg. 1996. Reflections on a work-oriented design project. *Human-Computer Interaction* 11: 237–265.
- Bloor, David. 1976. *Knowledge and Social Imagery*. Routledge & Kegan Paul.
- Bloor, David. 1999a. Anti-Latour. *Studies in History and Philosophy of Science* 30 (1): 81–112.
- Bloor, David. 1999b. Reply to Bruno Latour. *Studies in History and Philosophy of Science* 30 (1): 131–136.
- Blume, Stuart. 2000. Land of hope and glory: Exploring cochlear implantation in the Netherlands. *Science, Technology & Human Values* 25 (2): 139–166.
- Boonen, Lieke. 2009. Consumer Channeling in Health Care: (Im)Possible? PhD dissertation, Erasmus University Rotterdam.
- Bowker, Geoffrey C. 2005. *Memory Practices in the Sciences*. MIT Press.
- Bowker, Geoffrey C., and Susan Leigh Star. 1999. *Sorting Things Out: Classification and Its Consequences*. MIT Press.
- Boyd, Cynthia M., Jonathan Darer, Chad Boulton, Linda P. Fried, Lisa Boulton, and Albert W. Wu. 2005. Clinical practice guidelines and quality of care for older patients with multiple comorbid diseases: implications for pay for performance. *Journal of the American Medical Association* 294 (6): 716–724.
- Brown, John Seely, and Paul Duguid. 2000. *The Social Life of Information*. Harvard Business School Press.

- Brown, Steve. 2004. As if Bergson had an MBA. Presented at seminar "Does STS Mean Business," Said Business School, Oxford.
- Brown, Steve D., and Paul Stenner. 2009. *Psychology Without Foundations: History, Philosophy and Psychosocial Theory*. SAGE.
- Bulmer, Martin. 1984. *The Chicago School of Sociology: Institutionalization, Diversity, and the Rise of Sociological Research*. University of Chicago Press.
- Burawoy, Michael. 2005. For public sociology. *American Sociological Review* 70 (1): 4–28.
- Burawoy, Michael, William Gamson, Charlotte Ryan, Stephen Pfohl, Diana Vaughan, Charles Derber, and Juliet Schor. 2004. Public sociologies: A symposium from Boston College. *Social Problems* 51 (1): 103–130.
- Burstin, Helen R., Alasdair Conn, Gary Setnik, Donald W. Rucker, Paul D. Cleary, Anne C. O'Neil, E. John Orav, Colin M. Sox, and Troyen A. Brennan. 1999. Benchmarking and quality improvement: The Harvard Emergency Department Quality Study. *American Journal of Medicine* 107 (5): 437–449.
- Cabana, Michael D., Cynthia S. Rand, Neil R. Powe, Albert W. Wu, Modena H. Wilson, Paul-André C. Abboud, and Haya R. Rubin. 1999. Why don't physicians follow clinical practice guidelines? A framework for improvement. *Journal of the American Medical Association* 282 (15): 1458–1465.
- Callon, Michel. 1986. Some elements of a sociology of translation: Domestication of the scallops and the fishermen of St. Brieuc Bay. In *Power, Action and Belief: A New Sociology of Knowledge?* ed. John Law. Routledge and Kegan Paul.
- Callon, Michel. 1998a. An essay on framing and overflowing: Economic externalities revisited by sociology. In *The Laws of the Markets*, ed. Michel Callon. Blackwell.
- Callon, Michel. 1998b. Introduction: The embeddedness of economic markets in economics. In *The Laws of the Markets*, ed. Michel Callon. Blackwell.
- Callon, Michel. 1998c. *The Laws of the Markets*. Blackwell.
- Callon, Michel. 1999. Actor-network theory: The market test. In *Actor Network Theory and After*, ed. John Law and John Hassard. Blackwell.
- Callon, Michel. 2004. Europe wrestling with technology. *Economy and Society* 33 (1): 121–134.
- Callon, Michel, Pierre Lascoumes, and Yannick Barthe. 2009. *Acting in an Uncertain World: An Essay on Technical Democracy*. MIT Press.
- Callon, Michel, and John Law. 1995. Agency and the Hybrid Collectif. *South Atlantic Quarterly* 94: 481–507.

- Callon, Michel, Cécile Méadel, and Vololona Rabeharisoa. 2002. The economy of qualities. *Economy and Society* 31 (2): 194–217.
- Callon, Michel, Yuval Millo, and Fabian Muniesa. 2007. *Market Devices*. Blackwell.
- Callon, Michel, and Fabian Muniesa. 2005. Economic markets as calculative collective devices. *Organization Studies* 28 (8): 1229–1250.
- Callon, Michel, and Vololona Rabeharisoa. 2004. Gino's lesson on humanity: Genetics, mutual entanglements and the sociologist's role. *Economy and Society* 33 (1): 1–27.
- Cambrosio, Alberto, and Camille Limoges. 1991. Controversies as governing processes in technology assessment. *Technology Analysis and Strategic Management* 3 (4): 377–396.
- Campbell, Harry, Rona Hotchkiss, Nicola Bradshaw, and Mary Porteous. 1998. Integrated care pathways. *British Medical Journal* 316: 133–137.
- Canguilhem, Georges. 1978. *On the Normal and the Pathological*. Reidel.
- Canguilhem, Georges. 1994. Normality and normativity. In *A Vital Rationalist: Selected Writings from Georges Canguilhem*, ed. François Delaporte. Zone Books.
- Cardillo, Alessio, Salvatore Scellato, Vito Latora, and Sergio Porta. 2006. Structural properties of planar graphs of urban street patterns. *Physical Review E* 73 (066107): 1–8.
- Cefkin, Melissa. 2009. *Ethnography and the Corporate Encounter: Reflections on Research in and of Corporations*. Berghahn.
- Charney, E. 1975. Compliance and prescribance. *American Journal of Diseases of Children* 129: 1009–1010.
- Chase, Richard B., and David A. Tansik. 1983. The customer contact model for organization design. *Management Science* 29 (9): 1037–1050.
- Chen, Pauline W. 2011. Finding the patient in a sea of guidelines. *New York Times*, May 19.
- Clark, Adele, and Susan Leigh Star. 2008. The social worlds framework: A theory/methods package. In *The Handbook of Science and Technology Studies*, third edition, ed. Edward J. Hackett, Olga Amsterdamska, Michael Lynch, and Judy Wajcman. MIT Press.
- Clawson, Dan, Robert Zussman, Joya Misra, Naomi Gerstel, Randall Stokes, Douglas L. Anderton, and Michael Burawoy, eds. 2007. *Public Sociology: Fifteen Eminent Sociologists Debate the Politics and the Profession in the Twenty-First Century*. University of California Press.
- Coetzee, J. M. 2003. *Elizabeth Costello: Eight Lessons*. Secker & Warburg.

- Cohen, S. G., and D. E. Bailey. 1997. What makes teams work: Group effectiveness research from the shop floor to the executive suite. *Journal of Management* 23: 239–290.
- Cole, Simon. 2001. *Suspect Identities: A History of Fingerprinting and Criminal Identification*. Harvard University Press.
- Cole, Simon A. 2009. A cautionary tale about cautionary tales about intervention. *Organization* 16 (1): 121–141.
- Collins, Harry. 1990. Captives and victims: Comments on Scott Richards and Martin. *Science, Technology & Human Values* 16: 249–251.
- Collins, Patricia Hill. 1986. Learning from the outsider within: The sociological significance of black feminist thought. *Social Problems* 33 (6): S14–S32.
- Collins, Patricia Hill. 1999. Reflections on the outsider within. *Journal of Career Development* 26 (1): 85–88.
- Committee on Quality of Health Care in America. 2000. *To Err Is Human: Building a Safer Health System*. National Academies Press.
- Committee on Quality of Health Care in America. 2001. *Crossing the Quality Chasm: A New Health System for the 21st Century*. National Academies Press.
- Conein, Bernard, Nicolas Dodier, and Laurent Thevenot. 1993. Les objets dans l'action: De la maison au laboratoire. École des Hautes Études en Sciences Sociales.
- Conrad, Peter. 1985. The meaning of medication: Another look at compliance. *Social Science & Medicine* 20 (1): 29–37.
- Conrad, Peter. 1987. The noncompliant patient in search of autonomy. *Hastings Center Report* 17 (4): 15–17.
- Conrad, Peter, and Joseph W. Schneider. 1992. *Deviance and Medicalization: From Badness to Sickness*. Temple University Press.
- CrosskeysMedia. 2004. Involving patients in redesigning care. In *Pursuing Perfection in Health Care* (video series). Institute for Healthcare Improvement.
- Deleuze, Gilles. 1991. *Bergsonism*. Zone Books.
- Denzin, Norman K. 1968. On the ethics of disguised observation. *Social Problems* 15 (4): 502–504.
- Dewey, John. 1929. *The Quest for Certainty: A Study of the Relation of Knowledge and Action*. Minton, Balch.
- de Wilde, Rein. 1992. *Discipline en Legende: De identiteit van de sociologie in Duitsland en de Verenigde Staten 1970–1930*. Van Genneep.

- de Wilde, Rein. 1997. Sublime futures: Reflections on the modern faith in the compatibility of community, democracy, and technology. In *Technology and Democracy: Obstacles to Democratization*, ed. Sissel Myklebust. Centre for Technology and Culture.
- Dick, Bob, Ernie Stringer, and Chris Huxham. 2009a. Theory in action research. *Action Research* 7 (1): 5–12.
- Dick, Bob, Ernie Stringer, and Chris Huxham. 2009b. Final reflections, unanswered questions. *Action Research* 7 (1): 117–120.
- Dilts, David M. 2005. Practice variation: The Achilles' heel in quality cancer care. *Journal of Clinical Oncology* 23 (25): 5881–5882.
- Dodier, Nicolas. 1998. Clinical practice and procedures in occupational medicine: A study of the framing of individuals. In *Differences in Medicine*, ed. Marc Berg and Annemarie Mol. Duke University Press.
- Donabedian, Avedis. 2005. Evaluating the quality of medical care. *Milbank Quarterly* 83 (4): 691–729.
- Donaldson, Liam. 2002. Championing patient safety: Going global. *Quality & Safety in Health Care* 11: 112.
- Doubleday, Robert, and Ana Viseu. 2007. Questioning interdisciplinarity: What roles for laboratory based social science? In *Nano Meets Macro: Social Perspectives on Nanoscale Sciences and Technologies*, ed. Kamilla Lein Kjølborg and Fern Wickson. Pan Stanford.
- Downey, Gary Lee, and Joseph Dumit. 1997. Locating and Intervening: An introduction. In *Cyborgs and Citadels: Anthropological Interventions in Emerging Sciences and Technologies*, ed. Gary Lee Downey and Joseph Dumit. School of American Research Press.
- Downey, Gary Lee, and Juan C. Lucena. 1997. Engineering selves. In *Cyborgs and Citadels: Anthropological Interventions in Emerging Sciences and Technologies*, ed. Gary Lee Downey and Joseph Dumit. School of American Research Press.
- Dy, Sydney M., Pushkal Garg, Dorothy Nyberg, Patricia B. Dawson, Peter J. Pronovost, Laura Morlock, Haya R. Rubin, and Albert W. Wu. 2005. Critical pathway effectiveness: Assessing the impact of patient, hospital care, and pathway characteristics using qualitative comparative analysis. *Health Services Research* 40 (2): 499–516.
- Dy, Sydney M., Pushkal Garg, Dorothy Nyberg, Patricia B. Dawson, Peter J. Pronovost, Laura Morlock, Haya R. Rubin, Marie Diener-West, and Albert W. Wu. 2003. Are critical pathways effective for reducing postoperative length of stay? *Medical Care* 41 (5): 637–648.

- Eddy, David M., Joshua Adler, Bradley Patterson, Don Lucas, Kurt A. Smith, and Morris Macdonald. 2011. Individualized guidelines: The potential for increasing quality and reducing costs. *Annals of Internal Medicine* 154 (9): 627–634.
- Edwards, Carol, Sophie Staniszweska, and Nicola Crichton. 2004. Investigation of the ways in which patients' reports of their satisfaction with healthcare are constructed. *Sociology of Health & Illness* 26 (2): 159–183.
- Engeström, Yrjö. 1990. Organized forgetting: An activity-theoretical perspective. In *Learning, Working and Imagining: Twelve Studies in Activity Theory*, ed. Yrjö Engeström. KirjapainoOma Kyssa.
- Enthoven, Alain C. 1988. *Theory and Practice of Managed Competition in Healthcare Finance*. Elsevier.
- Enthoven, Alain C., and Wynand P. M. M. van de Ven. 2007. Going Dutch: Managed-competition health insurance in the Netherlands. *New England Journal of Medicine* 357 (24): 2421–2423.
- Epstein, Steve. 2007. *Inclusion: The Politics of Difference in Medical Research*. University of Chicago Press.
- Etzkowitz, Henry, and Loet Leydesdorff. 2000. The dynamics of innovation: From national systems and "Mode 2" to a triple helix of university-industry-government relations. *Research Policy* 29: 109–123.
- Evans, J. G. 1995. Evidence-based and evidence-biased medicine. *Age and Ageing* 24: 461–463.
- Evans, J. H. III, Y. Hwang, and N. J. Nagarajan. 1997. Cost reduction and process reengineering in hospitals. *Journal of Cost Management*, May/June: 20–27.
- Evidence-Based Medicine Working Group. 1992. Evidence-based medicine: A new approach to teaching the practice of medicine. *Journal of the American Medical Association* 268 (17): 2420–2425.c
- Faulkner, Alex. 2002. Casing the Joint: The material development of artificial hips. In *Artificial Parts, Practical Lives: Modern Histories of Prosthetics*, ed. Katherine Ott and Stephen Mihm. NYU Press.
- Fearong, K. C. H., O. Ljungqvist, M. Von Muyenfeldt, A. Revhaug, C. H. C. Dejong, K. Lassen, J. Nygren, et al. 2005. Enhanced recovery after surgery: A consensus review of clinical care for patients undergoing colonic resection. *Clinical Nutrition* 24 (3): 466–477.
- Field, M. J., and K. N. Lohr. 1990. *Clinical Practice Guidelines: Directions for a New Program*. National Academies Press.
- Fine, Gary Alan. 1995. *A Second Chicago School? The Development of a Postwar American Sociology*. University of Chicago Press.

- Fish, Stanley. 2004. Why we built the ivory tower. *New York Times*, May 21.
- Fisher, Erik. 2007. Ethnographic invention: Probing the capacity of laboratory decisions. *NanoEthics* 1 (2): 155–165.
- Fisher, Erik. 2011. Public science and technology scholars: Engaging whom? *Science and Engineering Ethics* 17 (4): 607–620.
- Ford, Robert C., and Myron D. Fottler. 2000. Creating customer-focused health care organizations. *Health Care Management Review* 25 (4): 18–33.
- Freeman, A. C., and K. Sweeney. 2001. Why general practitioners do not implement evidence: Qualitative study. *British Medical Journal* 323: 1100–1105.
- Freeman, Howard E., Sol Levine, and Leo G. Reeder. 1963, 1972, 1979. Present status of medical sociology. In *Handbook of Medical Sociology*, first, second, and third editions, ed. Howard E. Freeman, Sol Levine, and Leo G. Reeder. Prentice-Hall.
- Friedson, E. 1960. Client control and medical practice. *American Journal of Sociology* 65: 374–382.
- Fuller, Steve. 1999. Why science studies has never been critical of science: Some recent lessons on how to be a helpful nuisance and a harmless radical. *Philosophy of the Social Sciences* 30 (1): 5–32.
- Galliher, John F. 1995. Chicago's two worlds of deviance research: Whose side are they on? In *A Second Chicago School? The Development of a Postwar American Sociology*, ed. Gary Alan Fine. University of Chicago Press.
- Garcia, Marie-France. 1986. La construction sociale d'un marché parfait: le marché au cadran de Fontaines-en-Sologne. *Actes de la Recherche en Sciences Sociales* 65: 2–13.
- Garcia-Parpet, Marie-France. 2007. The social construction of a perfect market: The strawberry auction at Fontaines-en-Sologne. In *Do Economists Make Markets? On the Performativity of Economics*, ed. Donald MacKenzie, Fabian Muniesa, and Lucia Sia. Princeton University Press.
- Garfinkel, Harold. 1967. "Good" organizational reasons for "bad" clinic records. In Garfinkel, *Studies in Ethnomethodology*. Prentice-Hall.
- Garfinkel, Harold. 2002. *Ethnomethodology's Program: Working Out Durkheim's Aphorism*. Rowman & Littlefield.
- Garfinkel, Harold, and Harvey Sacks. 1970. On formal structures of practical action. In *Theoretical Sociology*, ed. John C. McKinney and Edward A. Teryakian. Appleton-Century-Crofts.
- Gibbons, Michael, Camille Limoges, Helga Nowotny, Simon Schwartzman, Peter Scott, and Martin Trow. 1994. *The New Production of Knowledge: The Dynamics of Science and Research in Contemporary Societies*. SAGE.

- Gilmore, Samuel. 1988. Schools of activity and innovation. *Sociological Quarterly* 29: 203–219.
- Godlee, Fiona. 2006. Say no to the market. *British Medical Journal* 333.
- Gold, Margaret. 1977. A crisis of identity: The case of medical sociology. *Journal of Health and Social Behavior* 18 (2): 160–168.
- Goldenberg, Maya J. 2006. On evidence and evidence-based medicine: Lessons from the philosophy of science. *Social Science & Medicine* 62 (11): 2621–2632.
- Goldstein, M. K., R. W. Coleman, S. W. Tu, R. D. Shankar, M. J. O'Connor, M. A. Musen, S. B. Martins, et al. 2004. Translating research into practice: Organizational issues in implementing automated decision support for hypertension in three medical centers. *Journal of the American Medical Association* 11 (5): 368–376.
- Gomart, Emilie. 2002. Methadone: Six effects in search of a substance. *Social Studies of Science* 32 (1): 93–135.
- Gouldner, Alvin W. 1968. The sociologist as partisan: Sociology and the welfare state. *American Sociologist* 3 (may): 103–116.
- Gray, Denis Pereira. 2005. Evidence-based medicine and patient-centred medicine: The need to harmonize. *Journal of Health Services Research & Policy* 10 (2): 66–68.
- Greenberg, Selig. 1971. *The Quality of Mercy: A Report on the Critical Condition of Hospital and Medical Care in America*. Atheneum.
- Grilli, Roberto, and Jonathan Lomas. 1994. Evaluating the message: The relationship between compliance rate and the subject of a practice guideline. *Medical Care* 32 (3): 202–213.
- Grit, Kor, and Wilfred Dolfsma. 2002. The dynamics of the Dutch health care system: A discourse analysis. *Review of Social Economy* 60 (3): 377–401.
- Grol, R. 2000. Implementation of evidence and guidelines in clinical practice: A new field of research? *International Journal for Quality in Health Care* 12 (6): 455–456.
- Grol, R., R. Baker, and F. Moss. 2002. Quality improvement research: Understanding the science of change in health care. *Quality & Safety in Health Care* 11 (2): 110–111.
- Grol, R., and J. Grimshaw. 1999. Evidence-based implementation of evidence-based medicine. *Joint Commission Journal on Quality Improvement* 25 (10): 503–513.
- Grol, R., and M. Wensing. 2004. What drives change? Barriers to and incentives for achieving evidence-based practice. *Medical Journal of Australia* 15 (180): 57–60.
- Grol, R., A. Zwaard, H. Mokkink, J. Dalhuijsen, and A. Casparie. 1998. Dissemination of guidelines: Which sources do physicians use in order to be informed? *International Journal for Quality in Health Care* 10 (2): 135–140.

- Guba, Egon G., and Yvonna S. Lincoln. 1992. *Effective Evaluation: Improving the Usefulness of Evaluation Results through Responsive and Naturalistic Approaches*. Jossey-Bass.
- Guthman, Julie, and Melanie DuPuis. 2006. Embodying neoliberalism: Economy, culture, and the politics of fat. *Environment and Planning D* 24 (3): 427–448.
- Guyatt, G., J. Cairns, and D. Churchill. 1992. Evidence-based medicine: A new approach to teaching the practice of medicine. *Journal of the American Medical Association* 268 (17): 2420–2425.
- Hacking, Ian. 1983. *Representing and Intervening: Introductory topics in the Philosophy of Natural Science*. Cambridge University Press.
- Halfman, Willem. 2003. Boundaries of Regulatory Science: Eco/toxicology and the regulation of aquatic hazards of chemicals in the US, England, and the Netherlands, 1970–1995. PhD dissertation, University of Amsterdam.
- Halfon, Saul, Cora Olson, Ann Kilkelly, and Jane Lehr. Under review. TWISTS as theory and practice. *Science as Culture*.
- Hamlett, Patrick W. 2003. Technology theory and deliberative democracy. *Science, Technology & Human Values* 28 (1): 112–140.
- Hammersley, Martyn. 2001. Which side was Becker on? Questioning political and epistemological radicalism. *Qualitative Research* 1 (1): 91–110.
- Haraway, Donna J. 1991a. *Simians, Cyborgs and Women: The Reinvention of Nature*. Routledge.
- Haraway, Donna J. 1991b. Situated knowledges: The science question in feminism and the privilege of partial perspective. In *Simians, Cyborgs and Women: The Reinvention of Nature*, ed. Donna J. Haraway. Routledge.
- Haraway, Donna J. 1997. *Modest_Witness@Second_Millennium.FemaleMan_Meets_Onco-Mouse: Feminism and Technoscience*. Routledge.
- Harbers, Hans. 2005a. Epilogue: Political materials—material politics. In *Inside the Politics of Technology: Agency and Normativity in the Co-production of Technology and Society*, ed. Hans Harbers. Amsterdam University Press.
- Harbers, Hans. 2005b. *Inside the Politics of Technology: Agency and Normativity in the Co-production of Technology and Society*. Amsterdam University Press.
- Hedgecoe, Adam. 2004. *The Politics of Personalized Medicine: Pharmacogenetics in the Clinic*. Cambridge University Press.
- Helgesson, Claes-Frederik. 2010. From dirty data to credible scientific evidence: Some practices used to clean data in large randomised clinical trials. In *Medical*

Proofs, Social Experiments: Clinical Trials in Shifting Contexts, ed. Catherine Will and Tiago Moreira. Ashgate.

Hess, David. 1997. If you're thinking of living in STS: A guide for the perplexed. In *Cyborgs and Citadels: Anthropological Interventions in Emerging Sciences and Technologies*, ed. Gary Lee Downey and Joseph Dumit. School of American Research Press.

Hess, David. 2001. Ethnography and the development of science and technology studies. In *Handbook of Ethnography*, ed. Paul Atkinson, Amanda Coffey, Sara Delamont, Lyn Lofland, and John Lofland. SAGE.

Iedema, Rick, Arthas Flabouris, Susan Grant, and Christine Jorm. 2006. Narrativizing errors of care: Critical incident reporting in clinical practice. *Social Science & Medicine* 62: 134–144.

Iedema, Rick, Christine Jorm, Debby Long, Jeffrey Braithwaite, Jo Travaglia, and Mary Westbrook. 2006. Turning the medical gaze upon itself: Root cause analysis and the investigation of clinical error. *Social Science & Medicine* 62: 1605–1615.

Iedema, Rick, and Carl Rhodes. 2006. Surveillance, resistance, observance: Exploring the teleo-affective volatility of workplace interaction. *Organization Studies* 27 (8): 1111–1130.

Iscoe, Neill A., Vivek Goel, Keyi Wu, Gord Fehringer, Eric Holowaty, and David Naylor. 1994. Variation in breast cancer surgery in Ontario. *CMAJ: Canadian Medical Association Journal* 150 (3): 345–352.

Jensen, Casper Bruun. 2007. Sorting attachments: On intervention and usefulness in STS and health policy. *Science as Culture* 16 (3): 237–251.

Jensen, Casper Bruun. 2008. Sociology, systems and (patient) safety: Knowledge translations in healthcare policy. *Sociology of Health & Illness* 30 (2): 309–324.

Jensen, Casper Bruun, and Peter Lauritsen. 2005. Qualitative research as partial connection: Bypassing the power-knowledge nexus. *Qualitative Research* 5 (1): 59–77.

Jerak-Zuiderent, Sonja. 2012. Certain uncertainties: Modes of patient safety in healthcare. *Social Studies of Science* 42 (5): 733–753.

Jerak-Zuiderent, Sonja. 2013. Generative Accountability: Comparing with Care. PhD dissertation, Erasmus University Rotterdam.

Jerak-Zuiderent, Sonja. In press. "Keeping open" by re-imagining fears and laughter. *Sociological Review*. DOI: 10.1111/1467-954X.12221.

Jerak-Zuiderent, Sonja, and Roland Bal. 2011. Locating the worths of performance indicators: Performing transparencies and accountabilities in health care. In *The Mutual Construction of Statistics and Society*, ed. Ann Rudinow Sætnan, Heidi Mork Lomell, and Svein Hammer. Routledge.

- Jones, Peter. 1984. *Living with Haemophilia*, second edition. MTP.
- Kember, Sarah. 2002. Reinventing cyberfeminism: Cyberfeminism and the new biology. *Economy and Society* 31 (4): 626–641.
- Kember, Sarah. 2003. *Cyberfeminism and Artificial Life*. Routledge.
- Kenney, Charles. 2008. *The Best Practice: How the New Quality Movement Is Transforming Medicine*. Public Affairs.
- Keulartz, Josef, Maartje Schermer, Michiel Korthals, and Tsjalling Swierstra. 2004. Ethics in technological culture: A programmatic proposal for a pragmatist approach. *Science, Technology & Human Values* 29 (1): 3–29.
- Kilo, Charles M. 1998. A framework for collaborative improvement: Lessons from the Institute for Healthcare Improvement's Breakthrough Series. *Quality Management in Health Care* 6 (4): 1–13.
- Kitchiner, Denise, and Peter Bundred. 1998. Integrated care pathways increase use of guidelines. *British Medical Journal* 317: 147.
- Knaapen, Loes, Hervé Cazeneuve, Alberto Cambrosio, Patrick Castel, and Beatrice Fervers. 2010. Pragmatic evidence and textual arrangements: A case study of French clinical cancer guidelines. *Social Science & Medicine* 71 (4): 685–692.
- Knobel, Cory, and Geoffrey C. Bowker. 2011. Values in design. *Communications of the ACM* 54 (7): 26–28.
- Kuhn, Thomas S. 1977. The function of measurement in modern physical science. In *The Essential Tension: Selected Studies in Scientific Tradition and Change*, ed. Thomas S. Kuhn. University of Chicago Press.
- Kwa, Chunglin. 2011. *Styles of Knowing: A New History of Science from Ancient Times to the Present*. University of Pittsburgh Press.
- Lampland, Martha, and Susan Leigh Star. 2009. *Standards and Their Stories: How Quantifying, Classifying, and Formalizing Practices Shape Everyday Life*. Cornell University Press.
- Latour, Bruno. 1987. *Science in Action: How to Follow Scientists and Engineers through Society*. Harvard University Press.
- Latour, Bruno. 1988a. Mixing humans and nonhumans together: The sociology of a door-closer. *Social Problems* 35 (3): 298–310.
- Latour, Bruno. 1988b. The politics of explanation. In *Knowledge and Reflexivity*, ed. Steve Woolgar. SAGE.
- Latour, Bruno. 1990. Drawing things together. In *Representation in Scientific Practice*, ed. Michael Lynch and Steve Woolgar. MIT Press.

- Latour, Bruno. 1996. On Actor-Network Theory: A few clarifications. *Soziale Welt* 47 (4): 367–381.
- Latour, Bruno. 2004. Why has critique run out of steam? From matters of fact to matters of concern. *Critical Inquiry* 30: 225–248.
- Latour, Bruno, and Vincent Antonin Lépinay. 2009. *The Science of Passionate Interests: An Introduction to Gabriel Tarde's Economic Anthropology*. Prickly Paradigm Press.
- Latour, Bruno, and Steve Woolgar. 1979. *Laboratory Life: The Construction of Scientific Facts*. SAGE (1986 edition: Princeton University Press).
- Law, John. 2000. Ladbroke Grove, or How to Think about Failing Systems. Centre for Science Studies, Lancaster University (<http://www.lancs.ac.uk/fass/sociology/papers/law-ladbroke-grove-failing-systems.pdf>).
- Law, John. 2004. *After Method: Mess in Social Science Research*. Routledge.
- Law, John, and John Urry. 2004. Enacting the social. *Economy and Society* 33 (3): 390–410.
- Lawson, Annette. 1991. Whose side are we on now? Ethical issues in social research and medical practice. *Social Science & Medicine* 32 (5): 591–599.
- Leape, Lucian L., G. Rogers, D. Hanna, P. Griswold, F. Federico, C. A. Fenn, D. W. Bates, L. Kirle, and B. R. Clarridge. 2006. Developing and implementing new safe practices: Voluntary adoption through statewide collaboratives. *Quality & Safety in Health Care* 15: 289–295.
- Leatherman, Sheila, Donald M. Berwick, Debra Iles, Lawrence S Lewin, Frank Davidoff, Thomas Nolan, and Maureen Bisognano. 2003. The business case for quality: Case studies and an analysis. *Health Affairs* 22 (2): 17–30.
- Levine, Sol. 1987. The changing terrains in medical sociology: Emergent concern with quality of life. *Journal of Health and Social Behavior* 28 (1): 1–6.
- Lewin, Kurt. 1951. *Field Theory in Social Science: Selected Theoretical Papers*. Harper and Row.
- Leydesdorff, Loet, and Janelle Ward. 2005. Science shops: A kaleidoscope of science-society collaborations in Europe. *Public Understanding of Science* 14 (4): 353–372.
- Light, Donald W. 2000. The medical profession and organizational change: From professional dominance to countervailing power. In *Handbook of Medical Sociology*, ed. Chloe E. Bird, Peter Conrad, and Allen M. Fremont. Prentice-Hall.
- Lindenauer, Peter K. 2008. Effects of quality improvement collaboratives are difficult to measure using traditional biomedical research methods. *British Medical Journal* 336: 1448–1449.

Lorence, P., and M. Richards. 2002. Variation in coding influence across the USA: Risk and reward in reimbursement optimization. *Journal of Management in Medicine* 166: 422–435.

Luff, Paul, Jon Hindmarsh, and Christian Heath. 2000. *Workplace Studies: Recovering Work Practice and Informing System Design*. Cambridge University Press.

Lutfey, Karen. 2005. On practices of “good doctoring”: Reconsidering the relationship between provider roles and patient adherence. *Sociology of Health & Illness* 27 (4): 421–477.

Lutfey, Karen, and William Wishner. 1999. Beyond “compliance” is “adherence”: Improving the prospect of diabetes care. *Diabetes Care* 22 (4): 635–639.

Lynch, Michael. 1991. Laboratory space and the technological complex: An investigation of topical contextures. *Science in Context* 4 (1): 51–78.

Lynch, Michael. 1993. *Scientific Practice and Ordinary Action: Ethnomethodology and Social Studies of Science*. Cambridge University Press.

Lynch, Michael. 2006. From ruse to farce. *Social Studies of Science* 36 (6): 819–826.

Lynch, Michael. 2009. Science as a vacation: Deficits, surfeits, PUSS, and doing your own job. *Organization* 16 (1): 101–119.

Lynch, Michael, and Simon Cole. 2005. Science and Technology Studies on trial: Dilemmas of expertise. *Social Studies of Science* 35 (2): 269–311.

MacKenzie, Donald, and Yuval Millo. 2003. Constructing a market, performing theory: The historical sociology of a financial derivatives exchange. *American Journal of Sociology* 109 (1): 107–145.

MacKenzie, Donald, Fabian Muniesa, and Lucia Siu. 2007. *Do Economists Make Markets? On the Performativity of Economics*. Princeton University Press.

Manna, Radjesh, Paul Steinbusch, Joost Zuurbier, and Marc Berg. 2006. Businesscase voor kwaliteit: Kostenbeheersing door maximale inzet op verbetering van zorg. Department of Health, Policy and Management, Erasmus University Rotterdam.

Mannucci, P. M. 2003. Hemophilia: Treatment options in the twenty-first century. *Journal of Thrombosis and Haemostasis* 1 (7): 1349–1355.

Markussen, Randi. 1996. Politics of intervention in design: Feminist reflections on the scandinavian tradition. *AI & Society* 10: 127–141.

Markussen, Randi, and Finn Olesen. 2007. Rhetorical authority in STS-studies of information technology: Reflections on a study of implementation of IT at a hospital ward. *Science as Culture* 16 (3): 267–279.

Marres, Noortje. 2005. *No Issue, No Public: Democratic Deficits after the Displacement of Politics*. University of Amsterdam.

- Marrie, Thomas J., Catherine Y. Lau, Susan L. Wheeler, Cindy J. Wong, Margaret K. Vandervoort, and Brian G. Feagan. 2000. A controlled trial of a critical pathway for treatment of community-acquired pneumonia. *Journal of the American Medical Association* 283 (6): 749–755.
- Martin, Brian. 1993. The critique of science becomes academic. *Science, Technology & Human Values* 18 (2): 247–259.
- Martin, Brian. 1996. Sticking a needle into science: The case of polio vaccines and the origin of AIDS. *Social Studies of Science* 26: 245–276.
- Martin, Brian, Evelleen Richards, and Pam Scott. 1991. Who's a captive? Who's a victim? Response to Collins's method talk. *Science, Technology & Human Values* 16 (2): 252–255.
- Marx, Karl. 1845. Theses on Feuerbach. In *Marx and Engels: Basic Writings on Politics and Philosophy*, ed. Lewis S. Feuder. Doubleday Anchor.
- Massey, Douglas S. 2007. The strength of weak politics. In *Public Sociology: Fifteen Eminent Sociologists Debate the Politics and the Profession in the Twenty-First Century*, ed. Dan Clawson, Robert Zussman, Joya Misra, Naomi Gerstel, Randall Stokes, Douglas L. Anderton, and Michael Burawoy. University of California Press.
- May, Carl, Tim Rapley, Tiago Moreira, Tracy Finch, and Ben Heaven. 2006. Techno-governance: Evidence, subjectivity, and the clinical encounter in primary care medicine. *Social Science & Medicine* 62: 1022–1030.
- McDonald, Heather, Amit Garg, and Brian Haynes. 2002. Interventions to enhance patient adherence to medication prescriptions. *Journal of the American Medical Association* 288 (22): 2868–2879.
- McKinlay, John B. 1999. The end of the golden age of doctoring. *New England Research Institutes Network* 1 (summer): 3.
- McMaster, T., R. T. Vidgen, and D. G. Wastell. 1997. Technology transfer: Diffusion or translation? In *Facilitating Technology Transfer through Partnership. Learning from Practice and Research*, ed. T. McMaster. Chapman and Hall.
- Mead, Nicola, and Peter Bower. 2000. Patient-centredness: A conceptual framework and a review of the empirical literature. *Social Science & Medicine* 51 (7): 1087–1110.
- Mesman, Jessica. 2007. Disturbing observations as a basis for collaborative research. *Science as Culture* 16 (3): 281–295.
- Metzl, Jonathan A. 2010. Why against health? In *Against Health: How Health Became the New Morality*, ed. Jonathan A. Metzl and Anna Kirkland. New York University Press.
- Metzl, Jonathan A., and Anna Kirkland, eds. 2010. *Against Health: How Health Became the New Morality*. New York University Press.

- Ministry of Health Welfare and Sport. 2005. Better Faster. <http://www.snellerbeter.nl/english>.
- Mittman, Brian S. 2004. Creating the evidence base for quality improvement collaboratives. *Annals of Internal Medicine* 140 (11): 897–901.
- Mol, Annemarie. 1999. Ontological politics; A word and some questions. In *Actor Network Theory and After*, ed. John Law and John Hassard. Blackwell.
- Mol, Annemarie. 2002. *The Body Multiple: Ontology in Medical Practice*. Duke University Press.
- Mol, Annemarie. 2008. *The Logic of Care: Health and the Problem of Patient Choice*. Routledge.
- Moreira, Tiago. 2007. Entangled evidence: Knowledge making in systematic reviews in healthcare. *Sociology of Health & Illness* 29 (2): 180–197.
- Mouffe, Chantal. 2000. *The Democratic Paradox*. Verso.
- Mulkay, Michael, Jonathan Potter, and Steven Yearley. 1983. Why an analysis of scientific discourse is needed. In *Science Observed: Perspectives on the Social Study of Science*, ed. Karin Knorr Cetina and Michael Mulkay. SAGE.
- Muniesa, Fabian, Yuval Millo, and Michel Callon. 2007. An introduction to market devices. In *Market Devices*, ed. Michel Callon, Yuval Millo, and Fabian Muniesa. Blackwell.
- Murray, Mark, and Donald M. Berwick. 2003. Advanced access: Reducing waiting and delays in primary care. *Journal of the American Medical Association* 26 (8): 1035–1040.
- Mykhalovskiy, Eric, and Lorna Weir. 2004. The problem of evidence-based medicine: Directions for social science. *Social Science & Medicine* 59 (5): 1059–1069.
- Navaro, Vincent. 1976. *Medicine Under Capitalism*. Prodist.
- Neuberger, Julia, C. Guthrie, and D. Aaronvitch. 2013. More care, less pathway: a review of the Liverpool Care Pathway. Department of Health, Crown Copyright.
- Nickelsen, Niels Christian. 2009. Rethinking interventionist research: Navigating oppositional networks in a Danish hospital. *Journal of Research Practice* 5 (2): 1–18.
- Nolan, T., R. Resar, C. Haraden, and F. A. Griffin. 2004. Improving the Reliability of Healthcare. IHI Innovation Series white paper, Institute for Healthcare Improvement.
- Nowotny, Helga. 2007. How many policy rooms are there? Evidence-based and other kinds of science policies. *Science, Technology & Human Values* 32 (4): 479–490.

- Oertle, Marc, and Roland Bal. 2010. Understanding non-adherence in chronic heart failure: A mixed-method case study. *Quality & Safety in Health Care* 19: 1–5.
- Øvretveit, John. 2002. *Action Evaluation of Health Programmes and Change. A Handbook for a User-Focused Approach*. Radcliffe.
- Øvretveit, J., P. Bate, P. Cleary, S. Cretin, D. Gustafson, K. McInnes, H. McLeod, et al. 2002. Quality collaboratives: Lessons from research. *Quality & Safety in Health Care* 11: 345–351.
- Øvretveit, John, and D. Gustafson. 2002. Evaluation of quality improvement programmes. *Quality & Safety in Health Care* 11: 270–275.
- Owens, Douglas K. 2011. Improving practice guidelines with patient-specific recommendations. *Annals of Internal Medicine* 154 (9): 638.
- Palm, Ineke. 2005. *De zorg is geen markt: Een kritische analyse van de marktwerking in de zorg vanuit verschillende perspectieven*. Wetenschappelijk Bureau SP.
- Parsons, Talcott. 1951. *The Social System*. Free Press.
- Pasveer, Bernike. 1992. *Shadows of Knowledge—Making a Representing Practice in Medicine: X-Ray Pictures and Pulmonary Tuberculosis, 1895–1930*. University of Amsterdam.
- Pinder, Ruth, Roland Petchey, Sara Shaw, and Yvonne Carter. 2005. What's in a care pathway? Towards a cultural cartography of the new NHS. *Sociology of Health & Illness* 27 (6): 759–779.
- Platt, Tony. 1975. Prospects for a radical criminology. In *Critical Criminology*, ed. Ian Taylor, Paul Walton, and Jock Young. Routledge & Kegan Paul.
- Pols, Jeanette. 2005. Enacting appreciations: Beyond the patient perspective. *Health Care Analysis* 13 (3): 203–221.
- Polsky, Ned. 1967. Research method, morality and criminality. In *Polsky, Hustlers, Beats, and Others*. Aldine.
- Porter, Michael E., and Elizabeth Olmsted Teisberg. 2004. Redefining competition in health care. *Harvard Business Review*, June: 65–76.
- Porter, Theodore M. 1995. *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life*. Princeton University Press.
- Porter, Theodore M. 1997. The management of society by numbers. In *Science in the Twentieth Century*, ed. John Krige and Dominique Pestre. Harwood.
- Power, Michael. 1997. *The Audit Society. Rituals of Verification*. Oxford University Press.
- Power, Michael. 2004. Counting, control and calculation: Reflections on measuring and management. *Human Relations* 57 (6): 765–783.

- Prins, Baukje. 1995. The ethics of hybrid subjects: Feminist constructivism according to Donna Haraway. *Science, Technology & Human Values* 20 (3): 352–367.
- Rainwater, Lee, and David J. Pittman. 1967. Ethical problems in studying a politically sensitive and deviant community. *Social Problems* 14 (4): 357–366.
- Riley, Therese, Penelope Hawe, and Alan Shiell. 2005. Contested ground: How should qualitative evidence inform the conduct of a community intervention trial? *Journal of Health Services Research & Policy* 10 (2): 103–110.
- Rip, Arie. 1986. Controversies as informal technology assessment. *Knowledge* 8 (2): 349–371.
- Ritzer, George. 1992. *The McDonaldization of society. An investigation into the Changing Character of Contemporary Social Life*. Pine Forge.
- Rodwin, Marc A. 1993. *Medicine, Money, and Morals: Physicians' Conflicts of Interest*. Oxford University Press.
- Rogers, Everett M. 1962. *Diffusion of Innovations*, fourth edition (Free Press, 1995).
- Roila, F. 2004. Transferring scientific evidence to oncological practice: A trial on the impact of three different implementation strategies on antiemetic prescriptions. *Supportive Care in Cancer* 12 (6): 446–453.
- Rose, Hilary, and Steven Rose. 1969. *Science and Society*. Penguin.
- Runciman, W. B. 2002. Lessons from the Australian Patient Safety Foundation: Setting up a national patient safety surveillance system. *Quality & Safety in Health Care* 11: 246–251.
- Sackett, David L, and William M. C. Rosenberg. 1995. On the need for evidence-based medicine. *Journal of Public Health* 17 (3): 330–334.
- Sackett, David L., William M. C. Rosenberg, J. A. Muir Gray, R. Brian Haynes, and W. Scott Richardson. 1996. Evidence based medicine: What it is and what it isn't. *British Medical Journal* 312 (7023): 71–72.
- Sackett, David L, Sharon E. Straus, W. Scott Richardson, William M. C. Rosenberg, and R. Brian Haynes. 2000. *Evidence-Based Medicine: How to Practice and Teach EBM*, second edition. Churchgate Livingstone.
- Scambler, Graham. 2008. *Sociology as Applied to Medicine*, sixth edition. Elsevier.
- Schein, Edgar H. 1987. *Qualitative Research Methods*, volume 5: *The Clinical Perspective in Fieldwork*. SAGE.
- Schouten, Loes M. T., Marlies E. J. Hulscher, Jannes J. E. van Everdingen, Robbert Huijsman, and Richard P. T. M. Grol. 2008. Evidence for the impact of quality improvement collaboratives: Systematic review. *British Medical Journal* 336: 1491–1494.

- Schrijvers, Guus, Nico Oudendijk, and Pety de Vries. 2003. In search of the quickest way to disseminate health care innovations. *International Journal of Integrated Care* 3: 1–22.
- Schut, Erik. 2003. *De zorg is toch geen markt? Laveren tussen marktfaalen en overheidsfaalen in de gezondheidszorg*. Oratiereeks Erasmus MC.
- Schut, Erik. 2009. Is de marktwerking in de zorg doorgeschoten? *Socialisme & Democratie* 7/8: 68–80.
- Scott, Pam, Evelleen Richards, and Brian Martin. 1990. Captives of controversy: The myth of the neutral social researcher in contemporary scientific controversies. *Science, Technology & Human Values* 15: 474–494.
- Scriven, Michael 1991. *Evaluation Thesaurus*, fourth edition. SAGE.
- Seeley, John R. 1967. The making and taking of problems: Toward an ethical stance. *Social Problems* 14 (4): 382–389.
- Seifer, Sarena. D. 2010. *Handbook of Engaged Scholarship: Contemporary Landscapes, Future Directions*, volume 1: *Institutional Change*. Michigan State University Press.
- Sellen, Abigail J., and Richard H. R. Harper. 2002. *The Myth of the Paperless Office*. MIT Press.
- Senge, Peter, and C. Otto Scharmer. 2001. Community action research. In *The SAGE Handbook of Action Research*, ed. Peter Reason and Hilary Bradbury. SAGE.
- Shapin, Steven, and Simon Schaffer. 1985. *Leviathan and the Air-Pump: Hobbes, Boyle, and the Experimental Life*. Princeton University Press.
- Shell Nederland. 2004. *Here You Work Safely or You Don't Work Here at All*. Shell Nederland.
- Silverman, David. 1987. *Communication and Medical Practice: Social Relations in the Clinic*. SAGE.
- Silvester, Kate, Richard Lendon, Helen Bevan, Richard Steyn, and Paul Walley. 2004. Reducing waiting times in the NHS: Is lack of capacity the problem? *Clinician in Management* 12: 105–111.
- Simborg, D. 1981. DRG creep: A new hospital-acquired disease. *New England Journal of Medicine* 304 (26): 1602–1604.
- Sjögren, Ebba, and Claes-Frederik Helgesson. 2007. The Q(u)ALYfying hand: Health economics and medicine in the shaping of Swedish markets for subsidized pharmaceuticals. In *Market Devices*, ed. Michel Callon, Yuval Millo, and Fabian Muniesa. Blackwell.
- Smith, Adam. 1776. *The Wealth of Nations*, volume I (Modern Library, 2000).

- Smith, Matthew. 2011. Second opinions: Mixing with medics. *Social History of Medicine* 24 (1): 142–150.
- Star, Susan Leigh. 1991a. Invisible work and silenced dialogues in knowledge representation. In *Women, Work and Computerization*, ed. Inger V. Eriksson, B. A. Kitchenham and Kea Tijdens. Elsevier.
- Star, Susan Leigh. 1991b. Power, technology and the phenomenology of conventions: On being allergic to onions. In *A Sociology of Monsters: Essays on Power, Technology and Domination*, ed. John Law. Routledge.
- Star, Susan Leigh, ed. 1995. *Ecologies of Knowledge: Work and Politics in Science and Technology*. State University of New York Press.
- Star, Susan Leigh, and Anselm Strauss. 1999. Layers of silence, arenas of voice: The ecology of visible and invisible work. *Computer Supported Cooperative Work* 8: 9–30.
- Steen Carlsson, K., S. Hojgard, A. Glomstein, S. Lethagen, S. Schulman, L. Tengborn, A. Lindgren, E. Berntorp, and B. Lindgren. 2003. On-demand vs. prophylactic treatment for severe haemophilia in Norway and Sweden: Differences in treatment characteristics and outcome. *Haemophilia* 9 (5): 555–566.
- Steinbusch, Paul, Jan Oostenbrink, Joost Zuurbier, and J. Schaepekens. 2007. The risk of upcoding in casemix systems: A comparative study. *Health Policy* 81: 289–299.
- Stewart, M., J. Brown, W. Weston, I. McWhinney, C. McWilliam, and T. Freeman. 1995. *Patient-Centred Medicine: Transforming the Clinical Method*. SAGE.
- Stinchcombe, Arthur L. 2007. Speaking truth to the public, and indirectly to power. In *Public Sociology: Fifteen Eminent Sociologists Debate the Politics and the Profession in the Twenty-First Century*, ed. Dan Clawson, Robert Zussman, Joya Misra, Naomi Gerstel, Randall Stokes, Douglas L. Anderton, and Michael Burawoy. University of California Press.
- Strathern, Marilyn. 1991. *Partial Connections*. Rowman & Littlefield.
- Strathern, Marilyn. 1992. The decomposition of an event. *Cultural Anthropology* 7: 244–254.
- Straus, Robert. 1957. The nature and status of medical sociology. *American Sociological Review* 22 (2): 200–204.
- Straus, Robert. 1999. Medical sociology: A personal fifty year perspective. *Journal of Health and Social Behavior* 40 (2): 103–110.
- Strauss, Anselm L. 1978. A social world perspective. *Studies in Symbolic Interaction* 1: 119–128.
- Strauss, Anselm, Shizuko Fagerhaugh, Barbara Suczek, and Carolyn Wiener. 1997. *Social Organization of Medical Work*. Transaction.

- Stroke Prevention in Atrial Fibrillation Investigators. 1991. Stroke prevention in atrial fibrillation study: Final results. *Circulation* 84 (2): 527–539.
- Suchman, Lucy. 1987. *Plans and Situated Actions: The Problem of Human-Machine Communication*. Cambridge University Press.
- Suchman, Lucy. 1995. Representations of work: Making work visible. *Communications of the ACM* 38 (9): 56–64.
- Suchman, Lucy. 2000. Making a case: “Knowledge” and “routine” work in knowledge production. In *Workplace Studies: Recovering Work Practice and Informing System Design*, ed. Paul Luff, Jon Hindmarsh, and Christian Heath. Cambridge University Press.
- Suchman, Lucy. 2002. Located accountabilities in technology production. *Scandinavian Journal of Information Systems* 14 (2): 91–105.
- Suchman, Lucy. 2007. *Human-Machine Reconfigurations: Plans and Situated Actions*, second edition. Cambridge University Press.
- Suchman, Lucy. 2008. Feminist STS and the sciences of the artificial. In *The Handbook of Science and Technology Studies*, ed. Edward J. Hackett, Olga Amsterdamska, Michael Lynch, and Judy Wajcman. MIT Press.
- Suchman, Lucy, and Randall Trigg. 1991. Understanding practice: Video as a medium for reflection and design. In *Design at Work: Cooperative Design of Computer Systems*, ed. Joan Greenbaum and Morten Kyng. Erlbaum.
- Tanenbaum, Sandra J. 1994. Knowing and acting in medical practice: The epistemological politics of outcomes research. *Journal of Health Politics, Policy and Law* 19 (1): 27–44.
- Tanenbaum, Sandra J. 2005. Evidence-based practice as mental health policy: Three controversies and a caveat. *Health Affairs* 24 (1): 163–174.
- Tarde, Gabriel. 1902. *Psychologie Économique*. Félix Alcan.
- Taylor, E., and J. Z. Taylor. 2004. Using qualitative psychology to investigate HACCP implementation barriers. *International Journal of Environmental Health Research* 14 (1): 53–63.
- The, Anne-Mei. 1999. *Palliatieve behandeling en communicatie een onderzoek naar het optimisme op herstel van longkankerpatiënten*. Bohn Stafleu Van Loghum.
- The, Anne-Mei, Tony Hak, Gerard Koëter, and Gerrit van der Wal. 2000. Collusion in doctor-patient communication about imminent death: An ethnographic study. *British Medical Journal* 321: 1376–1381.
- Thévenot, Laurent. 1984. Rules and implements: Investment in forms. *Social Sciences Information. Information Sur les Sciences Sociales* 23 (1): 1–45.

- Thévenot, Laurent. 1993. Essai sur les objets usuels. In *Les objets dans l'action: De la maison au laboratoire*, ed. Bernard Conein, Nicolas Dodier, and Laurent Thévenot. École des Hautes Études en Sciences Sociales.
- Thévenot, Laurent. 2001. Organized complexity: Conventions of coordination and the composition of economic arrangements. *European Journal of Social Theory* 4 (4): 405–425.
- Thévenot, Laurent. 2002. Which road to follow? The moral complexity of an “equipped” humanity. In *Complexities: Social Studies of Knowledge Practices*, ed. John Law and Annemarie Mol. Duke University Press.
- Thomas, William Isaac. 1914. The Polish-Prussian situation: An experiment in assimilation. *American Journal of Sociology* 19 (5): 624–639.
- Timmermans, Stefan. 2010. Evidence-based medicine: Sociological explorations. In *Handbook of Medical Sociology*, sixth edition, ed. Chloe E. Bird, Peter Conrad, Allen M. Fremont, and Stefan Timmermans. Vanderbilt University Press.
- Timmermans, Stefan, and Marc Berg. 2003. *The Gold Standard: The Challenge of Evidence-Based Medicine and Standardization in Health Care*. Temple University Press.
- Timmermans, Stefan, and Steven Haas. 2008. Towards a sociology of disease. *Sociology of Health & Illness* 30 (5): 659–676.
- Timmermans, Stefan, and Aaron Mauck. 2005. The promises and pitfalls of evidence-based medicine. *Health Affairs* 24 (1): 18–29.
- Tittle, Charles R. 2004. The arrogance of public sociology. *Social Forces* 82 (4): 1639–1643.
- TPG. 2004. Het kan écht: Betere zorg voor minder geld.
- Traore, A. N., A. K. C. Chan, K. E. Webert, N. Heddle, B. Ritchie, J. St-Louis, J. Teitel, D. Lillicrap, A. Iorio, and I. Walker. 2014. First analysis of 10-year trends in national factor concentrates usage in haemophilia: Data from CHARMS, the Canadian Hemophilia Assessment and Resource Management System. *Haemophilia* 20 (4): e251–e259.
- van der Lei, Johan. 1991. Use and abuse of computer-stored medical records. *Methods of Information in Medicine* 30: 79–80.
- van der Ploeg, Irma. 2001. *Prosthetic Bodies. The Construction of the Fetus and the Couple as Patients in Reproductive Technologies*. Kluwer.
- van de Ven, Andrew H. 2007. *Engaged Scholarship: A Guide for Organizational and Social Research*. Oxford University Press.
- van Egmond, Stans, and Teun Zuiderent-Jerak. 2010. Analysing policy change: The performative role of economics in the constitution of a new policy programme in

- Dutch health care. In *Science and Policy in Interaction: On Practices of Science Policy Interactions for Policy-Making in Health Care*, ed. Stans van Egmond. Erasmus University.
- van Geenen, Ronald. 2005. Aanval op medische missers. *Algemeen Dagblad*, November 24.
- Vanhaecht, K., and W. Sermeus. 2002. Draaiboek voor de ontwikkeling, implementatie en evaluatie van een klinisch pad: 30 stappenplan van het netwerk klinische paden. *Acta Hospitalia* 3: 13–27.
- van Loon, Ester, and Teun Zuiderent-Jerak. 2012. Framing reflexivity in quality improvement devices in the care for older people. *Health Care Analysis* 20 (2): 119–138.
- Verran, Helen. 2001. *Science and an African Logic*. University of Chicago Press.
- Verran, Helen. 2012. *Numbers and Nature. Lecture given at the WTMC Summer School: Seeing Through Numbers*. Ravenstein.
- Vikkelso, Signe. 2007. Description, resistance, and intervention. *Science as Culture* 16 (3): 297–309.
- Wachelder, Joseph. 2003. Democratizing science: Various routes and visions of Dutch science shops. *Science, Technology & Human Values* 28 (2): 244–273.
- Wagner, Ina. 1993. Women's voice: The case of nursing information systems. *AI & Society* 7: 295–310.
- Waitzkin, Howard. 1983. *The Second Sickness: Contradictions of Capitalist Health Care*. Free Press.
- Watson-Verran, Helen, and David Turnbull. 1995. Science and other indigenous knowledge systems. In *Handbook of Science and Technology Studies*, ed. Sheila Jasanoff, Gerald E. Markle, James C. Petersen, and Trevor Pinch. SAGE.
- Weber, Max. 1918–19. Science as a vocation. In *From Max Weber: Essays in Sociology*, ed. H. Gerth and C. W. Mills (Oxford University Press, 1991).
- Webster, Andrew. 2007a. Crossing boundaries: Social science in the policy room. *Science, Technology & Human Values* 32 (4): 458–478.
- Webster, Andrew. 2007b. Reflections on reflexive engagement: Response to Nowotny and Wynne. *Science, Technology & Human Values* 32 (5): 608–615.
- Weisz, George, Alberto Cambrosio, Peter Keating, Loes Knaapen, Thomas Schlich, and Virginie J. Tournay. 2007. The emergence of clinical practice guidelines. *Milbank Quarterly* 85 (4): 691–727.
- Wennberg, John E. 1984. Dealing with medical practice variations: A proposal for action. *Health Affairs* 3 (2): 6–32.

- Wennberg, John E., and M. M. Cooper. 1999. *The Quality of Medical Care in the United States: A Report on the Medicare Program*. American Hospital Publishing.
- Wennberg, John E., and Alan Gittelsohn. 1973. Small area variations in health care delivery. *Science* 183: 1102–1108.
- Wensing, Michel, Hub Wollersheim, and Richard Grol. 2006. Organizational interventions to implement improvements in patient care: A structured review of reviews. *Implementation Science* 1 (2): 1–9.
- White, Joseph. 1991. *Competitive Solutions: American Health Care Proposals and International Experience*. Brookings Institution.
- Willems, Dick. 1995. Tools of Care: Explorations into the Semiotics of Medical Technology. PhD dissertation, University of Maastricht.
- Willems, Dick. 2000. Managing one's body using self-management techniques: Practicing autonomy. *Theoretical Medicine and Bioethics* 21: 23–38.
- Willems, Dick. 2001. Dokters en patiënten in kleine medische technologie. In *Ingebouwde normen, medische technieken doorgelicht*, ed. Marc Berg and Annemarie Mol. Van der Wees.
- Williams, Bernard. 1985. *Ethics and the Limits of Philosophy* (Routledge, 2011).
- Willmore, Douglas W., and Henrik Kehlet. 2001. Management of patients in fast track surgery. *British Medical Journal* 322 (7284): 473–476.
- Winthereik, Brit Ross, Antoinette de Bont, and Marc Berg. 2002. Assessing the world of doctors and their computers: “Making available” objects of study and the research site through ethnographic engagement. *Scandinavian Journal of Information Systems* 14 (2): 47–58.
- Woodhouse, Edward, David Hess, Steve Breyman, and Brian Martin. 2002. Science studies and activism: Possibilities and problems for reconstructivist agendas. *Social Studies of Science* 32 (2): 297–319.
- Woolgar, Steve. 1983. Irony in the social studies of science. In *Science Observed*, ed. Karin Knorr Cetina and Michael Mulkay. SAGE.
- Woolgar, Steve. 1991. The turn to technology in social studies of science. *Science, Technology & Human Values* 16 (1): 20–50.
- Woolgar, Steve, and Javier Lezaun. 2013. The wrong bin bag: A turn to ontology in science and technology studies? *Social Studies of Science* 43 (3): 321–340.
- Wynne, Brian. 2007. Dazzled by the mirage of influence? STS-SSK in multivalent registers of relevance. *Science, Technology & Human Values* 32 (4): 491–503.
- ZonMw. 2008. Patient safety. <http://www.zonmw.nl/en/programmes/all-programmes/patient-safety/>.

- Zuiderent, Teun. 2002. Blurring the center: On the politics of ethnography. *Scandinavian Journal of Information Systems* 14 (2): 59–78.
- Zuiderent, Teun, Brit Ross Winthereik, and Marc Berg. 2003. Talking about distributed communication and medicine: On bringing together remote and local actors. *Human-Computer Interaction* 18 (1): 171–180.
- Zuiderent-Jerak, Teun. 2007. Preventing implementation: Experimental interventions with standardization in healthcare. *Science as Culture* 16 (3): 311–329.
- Zuiderent-Jerak, Teun. 2009. Competition in the wild: Configuring healthcare markets. *Social Studies of Science* 39 (5): 765–792.
- Zuiderent-Jerak, Teun. 2010. Embodied interventions—interventions on bodies: Experiments in practices of science and technology studies and hemophilia care. *Science, Technology & Human Values* 35 (5): 677–710.
- Zuiderent-Jerak, Teun, and Casper Bruun Jensen. 2007. Unpacking ‘intervention’ in Science and Technology Studies. *Science as Culture* 16 (3): 227–235.
- Zuiderent-Jerak, Teun, Roland Bal, and Marc Berg. 2012. Patients and their problems: Situated alliances of patient-centred care and pathway development. In *Cancer Patients, Cancer Pathways: Historical and Sociological Perspectives*, ed. Carsten Timmermann and Elizabeth Toon. Palgrave Macmillan.
- Zuiderent-Jerak, Teun, Frode Forland, and Fergus Macbeth. 2012. Guidelines should reflect all knowledge, not just clinical trials. *British Medical Journal* 345 (e6702).
- Zuiderent-Jerak, Teun, Mathilde Strating, Anna Nieboer, and Roland Bal. 2009. Sociological refigurations of patient safety: Ontologies of improvement and “acting with” quality collaboratives in healthcare. *Social Science & Medicine* 69 (12): 1713–1721.
- Zuiderent-Jerak, Teun, Kor Grit, and Tom van der Grinten. 2015. Critical composition of public values: On the enactment and disarticulation of what counts in healthcare markets. In *Value Practices in the Life Sciences and Medicine*, ed. Claes-Frederik Helgesson, Francis Lee, and Isabelle Dussauge. Oxford University Press.