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- j) To develop, improve and promote communication and media education.

Citizen Voices

Citizen Voices

Performing Public Participation in Science and Environment Communication

Louise Phillips, Anabela Carvalho and Judy Doyle



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Notes on Contributors

Ashley A. Anderson (MA) is a Ph.D. candidate in the Department of Life Sciences Communication at the University of Wisconsin-Madison. She has research interests in public opinion, public deliberation and science communication, in particular in relation to the online communication environment.

Jarkko Bamberg is a lecturer at the School of Management, University of Tampere. In the last ten years, he has been involved in the development and design processes of several ICT-mediated participatory practices in the city of Tampere. His research interests include a range of topics associated with practices of public engagement, urban planning, knowledge production and multimodal meaning-making. He is also interested in methodological questions and has co-authored a book on case study methodology in Finnish (*Tapaustutkimuksen Taito*).

Dominique Brossard (Ph.D., Cornell University) is Associate Professor and Director of Undergraduate Studies in the Department of Life Sciences Communication, University of Wisconsin-Madison, US, and a faculty affiliate of the UW-Madison Robert and Jean Holtz Center for Science and Technology Studies. Her research focuses on the intersection between science, media and the public and on the understanding of public opinion dynamics in the context of controversial science. She has recently co-edited (with Jim Shanahan and Clint Nesbit) the book *The Media, the Public, and Agricultural Biotechnology* (2007).

Anabela Carvalho (Ph.D., University College London) is Associate Professor at the Department of Communication Sciences of the University of Minho, Portugal. Her research focuses on various forms of environment, science and political communication with a particular emphasis on climate change. She is editor of *Communicating Climate Change: Discourses, Mediations and Perceptions* (2008), *As Alterações Climáticas, os Media e os Cidadãos* (2011), *Communication and Political Engagement with Climate Change* (with T. R. Peterson, in press) and of two journal special issues. Anabela Carvalho is Associate Editor of *Environmental Communication: A Journal of Nature and Culture* and is on the Board of Directors of the International Environmental Communication Association. She is also a co-founder, former Chair and currently Vice-Chair of the Science and Environment Communication Section of ECREA.

Julie Doyle (Ph.D., University of Sussex) is Principal Lecturer in Media Studies in the School of Arts and Media at the University of Brighton, UK. Her research focuses upon climate change communication, the visual culture of science and the environment, and media discourses of the environment. She is the author of *Mediating Climate Change* (2011) and has recently completed a Leverhulme funded project with the artist David Harradine, which explored new visualisations of climate change. She is on the Board of Directors of the International Environmental Communication Association and is a co-founder and Vice-Chair of ECREA's Science and Environment Communication Section.

Anders Horsbøl studied communication, philosophy and applied linguistics at different universities in Denmark, Germany, Austria and Great Britain. He is Associate Professor at the Department of Communication and Psychology, Aalborg University, Denmark. In addition to a doctoral thesis on the discursive construction of a political presidential candidate (2003), he has published especially in the fields of (multimodal) discourse analysis, political communication and health communication.

Maja Horst is Head of Department of Media, Cognition and Communication at the University of Copenhagen. She holds a Master's Degree in Communication Studies and a Ph.D. in Science and Technology Studies. Her research focuses on public understanding of science, science communication, research management and sociology of innovation. She has also conducted experiments with research communication installations for which she has been awarded the Danish Science Minister's science communication prize. Among other journals, she has published in *Social Studies of Science*, *Science, Technology and Human Values*, *Public Understanding of Science*, *Science as Culture* and *Science and Public Policy*.

Anna Maria Jönsson is Associate Professor at the Department of Culture and Communication at Södertörn University, Sweden. Her doctoral thesis from 2004 'Samma nyheter eller likadana?' (same news or similar?) analyses diversity in television news against the backdrop of theories about the public sphere and the media. Her research interests are in journalism and the public sphere, environmental governance and environmental communication. Several of her recent research projects and publications focus on public participation in environmental discourse.

Inger Lassen obtained her Ph.D. in discourse in professional settings from Aalborg University, Denmark. She is Professor at the Department of Culture and Global Studies at Aalborg University and is currently director of the doctoral programme on Discourse and Contemporary Culture. Her publications include a monograph on stylistics, an edited anthology on image and identity, and an edited anthology on gender. She has also published articles in international journals such as *Document Design*, *Discourse Studies*, *Critical Discourse Studies*, *Risk Research* and *Environmental Studies*.

Pauliina Lehtonen is a Ph.D. candidate at the School of Communication, Media, and Theatre, University of Tampere. Her research interests include public participation and democracy, knowledge production and communication, and the uses of communication technology, including social media, in civic action. Her doctoral thesis discusses practices of civic action in the context of urban governance. Her methodological interests focus on case study approaches and action research as means to further the dialogic production and communication of research.

Hedwig te Molder is Professor of Science and Technology Communication at the University of Twente and Associate Professor in Communication Science, Wageningen University, the Netherlands. Her work focuses on how issues of science and technology are handled in people's everyday talk, expert discourse and new forms of science and technology communication informed by discursive psychology. From the American Sociological Association, she received the Distinguished Book Award 2007 for the edited collection *Conversation and Cognition* (2005, with Jonathan Potter).

Louise Phillips (Ph.D., LSE) is Professor of Communication at the Department of Communication, Business and Information Technologies, Roskilde University, Denmark. Her current research is about dialogic and participatory approaches to communication theory and practice, including approaches to collaborative research. Her recent publications include the monograph *The Promise of Dialogue: The Dialogic Turn in the Production and Communication of Knowledge* (2011) and the edited collection *Knowledge and Power in Collaborative Research: A Reflexive Approach* with co-editors E. Gunnarsson, M. Kristiansen and M. Vehviläinen (in press). She was the co-ordinator of the NordForsk Network for the Study of the Dialogic Communication of Research (2008–2012) and is a co-founder, former Vice-Chair, and current Chair of ECREA's Science and Environment Communication Section.

Ursula Plesner is Associate Professor at the Department of Organization, Copenhagen Business School. She holds a Ph.D. in science communication and does research on innovation communication. Her work draws primarily on communication theory, innovation studies, and science and technology studies. Theoretically and methodologically, she is particularly interested in exploring the constitutive role of communication in innovation processes and the role of the material in communication processes. She has published in journals such as *Qualitative Inquiry*, *Public Understanding of Science*, *Journalism – Theory, Practice and Criticism* and *Convergence – The International Journal of Research into New Media Technologies*.

Annika Egan Sjölander is a senior lecturer in media and communication studies at Umeå University. Her doctoral thesis entitled 'Kärnproblem' (core issues) from 2004 is an analysis of the Swedish nuclear waste discourse, applying Michel Foucault's discourse analytical

understanding. She recently co-edited the volume *Tracking Discourses: Politics, Identity and Social Change* (2011). Several of her research projects have dealt with dimensions of democracy and the role of the (mass) media concerning environmental issues such as radioactive waste, chemicals and biofuels.

Dietram A. Scheufele (Ph.D.) is Professor and Director of Graduate Studies in the Department of Life Sciences Communication, University of Wisconsin-Madison. His work focuses on public opinion, political communication and public attitudes towards new technologies, including nanotechnology, stem cell research and genetically modified organisms.

Michael A. Xenos (Ph.D.) is Associate Professor in the Department of Communication Arts and Director of the Center for Communication Research, University of Wisconsin-Madison. He has research interests in political communication, science communication, democratic deliberation, public opinion and civic engagement.

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We co-founded the Science and Environment Communication Section in 2007 with the aim of fostering a strong network of inter- and transdisciplinary research on science and environment communication in the nexus between the fields of communication and media studies, science communication, science and technology studies, and environmental studies. Here, science is understood in broad terms as research that has roots in the social sciences, humanities or natural sciences and technology, and the environment is understood broadly as both the natural and the built milieu. The NordForsk network sought to develop the emergent field of study on the dialogic turn in the production and communication of knowledge by bringing together three dispersed traditions of research (action research, science and technology studies and social constructionist approaches to dialogic communication theory and practice).

Some of the contributions to the book are based on papers presented in a panel on dialogic approaches to research communication (organised by the NordForsk network) in the Science and Environment Communication Section at the ECREA Conference in Barcelona in 2008, and almost all the other contributions originated from papers presented at either the Barcelona conference or the ECREA Conference in Hamburg in 2010. We are grateful to the participants in the panels of the Science and Environment Communication Section at the two conferences who gave feedback to the papers that have developed into the chapters of this book.

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Chapter 1

Introduction

Louise Phillips, Anabela Carvalho and Julie Doyle

The starting point for this book is the *dialogic turn* in the production and communication of knowledge in which practices claiming to be based on principles of dialogue and participation have spread across diverse social fields (Aubert and Soler 2006; Gómez, Puigvert and Flecha 2011; Phillips 2011). One such field is planned communication and campaigns. Here we find that authorities increasingly supplement or replace information campaigns aiming to transmit or diffuse expert knowledge to recipient target-groups with communication initiatives in which experts and target-groups are reconfigured as *participants* in sites of *dialogue* where knowledge is co-produced through mutual learning. Another field is organisational development in which employees are encouraged to participate as agents of change through the collaborative production of knowledge in processes of dialogue, rather than being positioned at the receiving end of organisational changes dictated by management.

Yet another field is politics, and central and local government policymaking across policy areas including urban planning and science and environmental policy. The dialogic turn manifests itself here in so-called *participatory* governance, in which elite, top-down decision-making has been supplemented by *public engagement* or *public participation* activities in which citizens participate together with government officials and/or researchers in sites for dialogue. According to proponents of the dialogic turn, these sites for dialogue represent spaces for *citizen voices* that articulate potentially diverse perspectives. These perspectives are recognised as legitimate forms of knowledge and harnessed in decision-making about issues that affect the participants. The legitimacy of the knowledge forms is often taken to lie in their roots in citizens' locally anchored and socially and culturally specific experiences and values. 'Participatory' governance thus entails a reconfiguration – and apparent *democratisation* – of relations between policymakers, researchers and citizens. As Felt and Fochler (2010: 221) put it, 'governance' is hailed as a new means of collective decision-making in which different social actors participate in 'network-like constellations', in contrast to decision-making characterised by top-down hierarchical relations between government and relevant social actors.

This book concentrates exclusively on the dialogic turn in the governance of science and the environment. Although practices of science communication and public engagement with science and technology concentrate on the natural sciences and technology, the turn to dialogue in research/society relations has not only impregnated *science*, defined narrowly as research in the natural (including environmental) sciences and technology, but also research in the social sciences and humanities as well. Accordingly, when we write of 'science' in this

book, we often use it in this broad sense of ‘research’, and several of the chapters analyse the production and communication of social scientific knowledge while others focus on knowledge based on the natural and environmental sciences and technology.

We attempt in this book to build bridges across the fields of science and technology studies, environmental studies, and media and communication studies in order to provide theoretically informed and empirically rich accounts of how *citizen voices* are articulated, invoked, heard, marginalised or silenced in science and environment communication. Across a diverse range of national, social and institutional settings and on the basis of diverse theoretical and methodological approaches, the chapters together produce an in-depth, research-based analysis of the different, context-dependent, situated ways in which *participation* is ascribed meaning and practised in the communication of science and environment.

In this introductory chapter, we first sketch out how *citizen participation* is understood and enacted in the communication processes, which are constituted within, and constitute, the ‘participatory’ mode of governance. A key point here is that ‘participation’ and ‘dialogue’ are buzzwords with multiple, vague and shifting meanings in both academic research and everyday practices (Carpentier and Dahlgren 2011; Phillips 2011). By virtue of their status as buzzwords with a self-evidently positive value, ‘participation’ and ‘dialogue’ legitimate the practices that are constructed in their terms: when their positive value is taken-for-granted, critical questions are not raised, and proponents become oblivious to the tensions, contradictions, dilemmas and power imbalances inherent in all forms of knowledge production and communication (Phillips 2011).

Following this outline of the enactment of ‘citizen participation’ in ‘participatory’ science and environmental governance, we describe the routes taken in the book through the interdisciplinary terrain of research on public participation in science and environment communication. Here we draw attention to the different ways of conceptualising ‘citizens’ and ‘participation’ and the implications of those different conceptualisations for both theory and practice. We also address the ways in which different theoretical fields tackle the tensions, contradictions, dilemmas and power imbalances that arise in relation to the participation of citizens in science and environment communication. Finally, we introduce each of the chapters of the book, locating them in that terrain and indicating their contributions to research.

Conceptualising ‘citizen participation’ in science and environmental governance

As in other fields of social practice in the dialogic turn, the model of communication underpinning science and environmental governance is *dialogue* in which scientists and citizens engage in *mutual* learning on the basis of the different knowledge forms that they bring with them. The official aim is to involve citizens in processes of decision-making on scientific and environmental issues, including issues relating to the built environment such as urban planning. And it is argued that public participation in decision-making will

improve the quality of decisions and policy processes. In relation to science governance, the dialogue model is presented in policy documents as a decisive break from the previously dominant discourse, which articulated a ‘deficit’ model of communication; this model assumed that the public suffered from a deficit of knowledge about scientific developments that could be cured through the one-way transfer, diffusion or dissemination of scientific truths (Irwin 2001, 2006; Irwin and Michael 2003). In relation to environmental governance, landmark agreements such as the Rio Declaration on Environment and Development (1992) and the Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (1998) have stressed the importance of public participation in and access to information on environmental issues.

During the past two decades, dialogue-based public engagement initiatives such as citizen consultations, experiments in local democracy and dialogue-with-the-public activities have burgeoned across Europe and the rest of the world with respect to controversial and politically-pressing questions relating, for example, to nanotechnology, food biotechnology, climate change and sustainable development (for example, the British GM nation? debate over the commercial growing of GM crops [2003], the British Public Consultation on Developments in the Biosciences (PCDB) [1997–1999], the British Nanodialogues project [2005–2007], the German ‘Futur’ Research Dialogue [2001–2005], the Norwegian CREATE project [2002–2005] and the Swedish Technology Foresight programme [2001–2002]). In both academic texts and policy documents, public engagement exercises such as the above are interchangeably labelled as exercises in *public engagement* or *public participation*, and in this book we use both epithets. It should be noted, though, that since around 2000, there has been an increasing preference for the term *public engagement*, related to the emergence of the concept of *upstream* public engagement, as Delgado et al. (2010: 2) point out. The concept of *upstream* public engagement stresses the inclusion of the public in the process of determining the direction of scientific research; here, the public shape science ‘upstream’ of scientific developments (Wilsdon and Willis 2004). A contrast is drawn discursively to practices within the *public understanding of science* tradition. These practices treat the public as the recipients or consumers of completed research results: here, the public ‘meet’ science ‘downstream’ of scientific developments.

The forms of participatory democracy practised in science and environmental governance often build on models of deliberative democracy developed within political theory (e.g. Benhabib 1994, 2005; Dryzek 2000; Gastil and Levine 2005; Habermas 1996). Participants are positioned as ‘ordinary citizens’ with a legitimate role to play in deliberations about scientific and environmental developments by virtue of locally anchored, experience-based forms of knowledge, values and preferences. Expertise can be said to be *democratised* in the sense that scientific knowledge and scientific knowers relinquish their monopoly on expertise (Blok 2007). At the same time, principles of deliberative democracy stipulate the need for expert input in order to supply citizens with expert knowledge about the topic that, together with the other knowledges in their possession, will enable them to exercise the rights of *scientific citizenship* responsibly (Irwin 2001). In exercising those rights responsibly,

citizens act as competent *scientific citizens* deserving of the voice they have been given in deliberative processes (Elam and Bertilsson 2003).

Citizen participation in processes of decision-making in relation to scientific and environmental issues has been hailed as the guarantor of better and more accountable decisions by virtue of the properties of deliberation (e.g. Coenen 2010; Dietz and Stern 2008; Fischer 2009; Select Committee on Science and Technology, House of Lords 2000; Wilsdon and Willis 2004). At the same time, however, critical questions have been raised by researchers about the extent and nature of the dialogic turn in scientific and environmental governance (as well as more generally). It is argued in critical analysis of the dialogic turn in science and governance that, in practices that are framed as instances of participatory governance, 'dialogue' and 'participation' are sometimes heavily circumscribed through the top-down design and management of the process (e.g. Goven 2003; Trench 2008; Wynne 2006). The 'ladder of participation' identified by Arnstein in her seminal article of 1969 is often only partially fulfilled, usually in the form of information or consultation and only very rarely deliberation.

Some of this critical analysis suggests that the concepts of 'dialogue' and 'participation' represent buzzwords serving to legitimate practices and thus operating as technologies of power that mask the dominance of certain knowledge interests and forms of knowledge, values and preferences over others. In the worst cases, they serve as a *technology of legitimisation* (Harrison and Mort 1998; Stirling 2008), functioning instrumentally to pass off 'top-down' decision-making processes as 'bottom-up' democratic ones. This is, as noted earlier in this chapter, because the two concepts have a taken-for-granted positive value that tends to blind proponents to the workings of power and the tensions and contradictions intrinsic to practices based on principles of dialogue and participation. As Carpentier and Dahlgren (2011: 8) point out in relation to the concept of 'participation,' 'there is [...] a need for a more cool-headed approach towards participation that does not lose itself in celebratory frenzies.'

The critical science and technology studies literature on public engagement tends to concentrate on the framing and outcomes of participatory public-engagement exercises, including how the design positions citizens in particular ways with particular consequences for the results and the effects. The ways in which citizens actually 'fill out,' perform and negotiate those positions in the communication processes at the core of the exercises are given little attention. However, there is a growing body of research that does explore empirically how 'citizens' and 'publics' are constructed in the communication processes central to public participation in science and technology – often together with an analysis of the design. Many cases of such research have been published in journals in science and technology studies and environmental studies (e.g. Felt and Fochler 2010; Kerr, Cunningham-Burley and Tutton 2007; Michael 2009). *Citizen Voices* is distinguished by being the first edited book to examine the multiple meanings ascribed to practices of 'participation' in science and environment communication and to its actors – 'experts,' 'citizens' and 'publics' – and to consider the implications of those meanings for participants'

scope for action in science and environmental governance. Thus it goes beyond the buzzword of ‘participation’ and explores how ‘participation’ is enacted in different ways in different contexts. Here, we use the term ‘enactment’ in its everyday sense to refer to how ‘participation’ is played out in practice, rather than in the sense in which it is used in actor-network theory (see e.g. Mol 1999/2005).

Citizen Voices is also distinguished by its interdisciplinary scope, straddling science and technology studies (STS), environmental studies and media and communication studies. Since *science communication* has developed as a subfield of STS with relatively little contact with media and communication studies, the combination of STS and media and communication studies opens up for new opportunities for cross-fertilisation. In drawing both on STS and media and communication studies, and by focusing specifically on science and environment communication, the book contributes to the research area in media and communication studies on citizen participation and engagement in the media. This research area has been neglected in the past but now represents an emerging area (e.g. Carpentier 2011a, 2011b; Carpentier and Dahlgren 2011; Dahlgren 2011; Lewis et al. 2004), connected to the development of digital media, which are widely seen to carry the promise of participation and dialogue across differences including those of geography, social class, gender and ethnicity.

One of our primary motivations in compiling the book has been to bring together studies which both critically interrogate *and* empirically investigate the different meanings and enactments of ‘citizen participation’ in different forms and contexts of scientific and environmental communication. The overall purpose of the book is to provide theoretically informed and empirically rich analyses of how ‘citizen voices’ are brought into being, articulated, invoked, marginalised or silenced in communication processes in a variety of practices of scientific and environmental governance. Some of the chapters use the term ‘citizen voices’ rarely or not at all, referring instead to citizens or publics or particular groups such as bloggers or patients, while others use the term in an everyday sense to refer to the articulation or representation of the perspectives or viewpoints of citizens. Two of the chapters (Chapters 7 and 8) theorise ‘voices’ along the lines of Bakhtin. Bakhtin understands a voice not just as the medium for speech or the uttered speech of an individual, embodied person but as a discourse, ideology, perspective or theme that transcends the individual (Bakhtin 1981); for Bakhtin, meanings – including understandings of self and other – are generated in the tension between different and often contradictory and opposing voices. Thus a Bakhtinian perspective can form the basis for the analysis of processes of inclusion and exclusion whereby particular voices, articulating identities such as those of ‘citizens’ and particular forms of knowledge, dominate and others are marginalised or silenced (see Chapter 7).

Yet another key feature of the book is that it explores *public engagement* not just in the sense of organised activities belonging to the dialogic turn in science and environmental governance but in other senses of the term too. The term *public engagement* has also been used to refer to practices promoting attitudinal and behavioural change in relation to collective problems, such as climate change (e.g. Whitmarsh, O’Neill and Lorenzoni 2010).

And it can also designate processes of citizen-led involvement with social and political issues, through various forms of activism in which communicative practices in different media (and particularly user-generated content in the social media) are key. In this book, analyses are presented of all these forms of public engagement.

In particular, the chapters focus on three main types of public engagement practice. One type is made up of formal exercises in public engagement with science, technology and the environment that are based on models of ‘participatory’ democracy and organised by researchers or government organisations as part of the dialogic turn in scientific and environmental governance. This type of practice forms the object of analysis in all four chapters in Part II of the book (Chapters 7–10). The second type of practice consists of activities initiated and organised by citizens themselves, partly or wholly through the online media – what Dahlgren calls ‘civic practices’ (Dahlgren 2011: 91) (Chapters 4–6). The third group represents practices in which the media constructs ‘citizens’ through representational practices (Chapters 2 and 3).

The above spectrum – encompassing organised public engagement with an element of ‘top-down’ management, citizen-led initiatives involving online user-generated content, and mass-mediated representations of ‘citizens’ – allows for the creation, across chapters, of a comprehensive account of ‘citizen participation’ in science and environment communication. This account captures much of the diversity of local enactments. And by bringing together studies in a number of different countries across Europe, *Citizen Voices* stresses similarities and differences in the performance of citizen participation across national contexts. Thus it aims to demonstrate how designs and frameworks for ‘citizen participation’ are shaped by sociocultural, organisational and national contexts.

One key parameter distinguishing the practices analysed in the different chapters is whether or not ‘participation’ is enacted on the basis of models of ‘participatory’ democracy – that is, models such as those of ‘deliberative’ and radical democracy which operate with a ‘maximalist’ understanding of participation (Carpentier 2011b), ascribing an active role to citizens in democratic decision-making beyond the minimalist participation of voting stipulated in models of representative democracy. Another parameter on which the chapters vary is how the chapter authors themselves theorise ‘participation’ and whether they themselves draw on models of participatory democracy such as models of deliberative democracy or a post-structuralist model of radical democracy, critically analysing practices along these lines. A third parameter on which they differ is whether they use the concept of ‘citizen’ or other social categories such as ‘the public’, ‘publics’ or ‘lay people’ or particular groups such as ‘activists’, ‘patients’, ‘online media users’ and ‘bloggers’.

In sketching out the paths that the book carves out across an interdisciplinary terrain of research on public engagement with science and the environment, we concentrate below on two features of the terrain: one feature relates to the different ways of conceptualising ‘participation’ and the implications of those different conceptualisations for theory and practice; the other feature concerns the treatment, in different theoretical fields, of the

tensions and contradictions that arise in relation to the participation of citizens in science and environment communication.

Sketching out the interdisciplinary terrain of the book

Drawing on science and technology studies and environmental studies, many of the chapters build on research focusing on the contradictions and tensions in public engagement that, as noted above, emanate from the only partial nature of the shift to a more participatory, democratic, dialogue-based form of scientific and environmental governance. This research shows that – in spite of the rhetoric of participation, dialogue and the democratisation of expertise – much science and environment communication still articulates a diffusion model whereby information is disseminated from scientists to publics, and the scope for action or influence of citizens is heavily circumscribed (e.g. Kurath and Gisler 2009; Trench 2008; Wynne 2006; see also Renn, Webler and Wiedemann 1995).

In particular, the majority of the chapters of the book (Chapters 2, 3, 5, 7, 8 and 9) are based on, or in line with, what Horst (in press) has labelled a *model of emergence*, in which communication is conceptualised, along social constructionist lines, as a constitutive force in the context-dependent, relational construction of objects and subjects (e.g. Felt and Fochler 2010; Horst 2008; Horst and Irwin 2010; Irwin 2001, 2006; Irwin and Michael 2003; Michael 2009). As a constitutive force in the construction of objects and subjects, communication brings entities such as ‘science’, ‘citizens’, ‘publics’ and ‘scientists’ into being. These chapters present empirically rich analyses of how the category of ‘citizen’ – and related categories representing ‘the people’ such as ‘the ‘public’/‘publics’, ‘lay people’ and ‘activists’ – are brought into being in communication processes within particular social and institutional contexts.

A central theme of Chapters 3, 7 and 8 is the implications of particular constructions of the ‘citizen’ for the extent and nature of citizens’ *participation* and, in particular, their scope for action in relation to scientific and environmental matters. This obviously involves addressing issues of power in relation to participation. Chapter 3 shows, for example, in a case study of a series of investigative reports on ethanol in Sweden how citizens are primarily constructed as taxpayers and are rarely heard in the reports. Drawing on a Foucauldian, discourse-analytical understanding of power, Chapters 7 and 8 address how, in two organised initiatives in public engagement in climate-change communication, power operates through processes of inclusion and exclusion whereby ‘participation’ and ‘citizens’ are constructed in particular ways which exclude or marginalise alternative ways of knowing and doing.

While not all of the chapters view citizens as categories constructed in communication processes and explore the implications for citizens’ ‘participation’ in science and environmental governance, *all* the chapters attend to the extent to which, and the ways in which, citizen voices are heard, recognised, marginalised or silenced in communication

processes. In so doing, they touch on issues of power in relation to participation – and in particular, the issue of the *inclusion* of citizen voices in communication about science and the environment – without necessarily theorising power explicitly. In many cases, the analysis draws on the field of media and communication studies in order to theorise and analyse the communication processes in which citizen voices are articulated and circumscribed.

Drawing on media and communication studies, the chapters make use of a variety of approaches for theorising and empirically-analysing communication processes, in particular social and institutional contexts that make possible and circumscribe the articulation of citizen voices. Citizen identities, political subjectivity, formal and informal spaces for social intervention and decision-making processes – all involve meaning-making practices that can be uniquely analysed and assessed by using conceptual and methodological tools from the field of media and communication studies. In recent years, research in environmental communication and media studies has burgeoned (e.g. Cox 2006; Corbett 2006; Hansen 2010; Lester 2010), demonstrating a growing awareness of the importance of understanding communication and media processes in relation to environmental issues. Contributing to this field, this book offers a more specific and much-needed focus upon citizen voices. In so doing, it adds to the research that has been carried out on citizen participation in the media, which, as noted above, has been limited but is now growing in size (e.g. Carpentier 2011a, 2011b; Dahlgren 2011; Lewis et al. 2004).

For instance, one of the key studies in this research area is Lewis et al.'s (2004) extensive content, analytic study of the construction of 'citizenship' in broadcast news in the US and UK, which showed that citizens tend to be represented not as engaged citizens but as 'passive observers of the world' (2004: 154). Citizens are given the opportunity to express *emotions* and talk about their *experiences* but not to voice *political views* or to demonstrate an *active engagement in politics*. From the study it emerged that the most frequent form of citizen representation was that of the private individual who describes, or is referred to as describing, her experience without expressing an explicit political opinion (2004: 162). Thus citizens' identities and scope for action as 'citizens' are heavily circumscribed: 'While politicians are often seen telling us what should be done about the world', Lewis et al. point out, 'citizens are largely excluded from active participation in such deliberations' (2004: 163). In a similar fashion, all the chapters in this book attend to the implications of the *specific, context-dependent ways* in which 'citizens', 'publics' and 'participation' are given meaning and enacted.

We also recognise the value of Carpentier's distinction between the concept of 'participation', on the one hand, and the concepts of 'interaction' and 'access', on the other (2011a, 2011b). According to Carpentier, there is a tendency for media and communications researchers to operate with an overly broad and vague understanding of 'audience participation', applying it across the board to a myriad of different practices without reflexive consideration of their conceptualisation of the term and without detailed analysis of the limits to 'audience participation' in the practices analysed. 'Participation' is often reduced to, or conflated with, 'access', which is a question of presence in a specific media

practice such as an online chat forum and the availability of media production technologies, or to ‘interaction’, which represents the form of communication established between actors. Carpentier argues that both ‘access’ and ‘interaction’ are prerequisites for ‘participation’; ‘participation’ is distinct from and *more* than ‘access’ and ‘interaction’ in that it involves the engagement of actors in decision-making processes in which ‘power relationships [...] are, to an extent, egalitarian’ (2011a: 31). It is, Carpentier argues, crucial to heed the qualification ‘to an extent’ since the political struggle over ‘participation’ centres on the *extent* of participation, with ‘minimalist’ understandings maintaining heavy power imbalances and confining citizen participation to ‘access’ and ‘interaction’ and ‘maximalist’ understandings arguing for the active participation of citizens in decision-making processes based on principles of ‘participatory’ democracy (Carpentier 2011a: 30–1). Endorsing this, we would like to add that another reason why it is important to stress that power relations can only ever be egalitarian ‘to an extent’ is that the taken-for-granted, positive nature of ‘participation’ may lead to a lack of attention to the operation of power imbalances and thus may construct a vision – from a Foucauldian perspective, an illusion – of participatory practices as power-free spaces for communication among equals. The vision may blind proponents to the workings of processes of exclusion as well as inclusion in ‘participatory’ forms of science and environment communication.

The book shows how approaches from within and across STS and environmental studies *and* media and communication studies – for example, actor-network theory, dialogic communication theory, discourse theory and analysis, and quantitative approaches involving an online experiment and survey – can provide insight into the communicative practices that construct, reproduce and obstruct the roles of citizens in forming views and acting in relation to social, political and ethical aspects of scientific and environmental developments. The chapters focus on various social and institutional settings, from citizen consultation forums to the media, and on diverse themes: interactions between researchers and citizens; formats and structures for public engagement in science and the environment; the mass mediation of scientific and environmental citizenship; ICTs and citizen participation; and citizen activism in relation to governmental policymaking about an environmental issue. Together, the chapters produce an in-depth, research-based analysis of how participation and citizenship are played out in the communication of science and environment across a wide terrain of fields of practice in a range of countries across Eastern, Northern and Western Europe and the US: Bulgaria, Denmark, Netherlands, Sweden, Finland and the US.

We have divided the book into two parts. Part I presents analyses of public participation in the mediation of science and the environment. Chapter 2 focuses on how ‘citizens’ are constructed and represented in media production practices. Chapter 3 explores how ‘citizens’ are constructed in media representations, while the remaining three chapters in this part look at how citizens themselves initiate practices in which they, in some way or another, *participate* in science or environment communication, partly or wholly through the use of online media. Part II explores public participation in formal public engagement

exercises constructed and conducted by researchers or government officials as part of the dialogic turn in science and environmental governance.

In the first chapter of Part I, Chapter 2, Ursula Plesner theorises citizen participation in the production and communication of social scientific knowledge via the mass media in terms of an approach inspired by actor-network theory. Applying this approach, the chapter explores how citizens *participate* in social science communication in the sense that citizen voices *make a difference* for the production and communication of social scientific knowledge via the mass media, either due to direct interactions between audiences and researchers in the mass media, or through journalists' and researchers' co-constructions of citizens' needs and wants. Theoretically, the chapter argues for a conception of the mass mediation of science as consisting of dialogic moments, and thus questions the view of mass mediation of science as a linear, top-down process. This argument is based on empirical studies of the production of concrete media texts, consisting of interviews with journalists and scientists about their interactions in relation to the particular texts, as well as textual analyses. The chapter adds to the discussion of how citizens may participate in various stages of the production and communication of scientific knowledge by placing analytical attention *in between* studies of public engagement exercises (with the very deliberate and visible participation of citizens) and studies of media representations (with a concern with textual representations of citizen voices). Its contribution is to show how negotiations about citizens' concerns and abilities take place in informal settings behind the scenes of mass mediation and how those negotiations make a difference for both the production and the communication of science.

In Chapter 3, Annika Egan Sjölander and Anna Maria Jönsson focus on the construction of the public in news discourses on environmental risks in both traditional and online media. The chapter takes as its starting point the observation that there is wide recognition that, given the environmental risks we are facing, there is a pressing need for active public participation in environmental communication. The initiatives for involving the public vary greatly across practices and so do the conception(s) of 'the public'. The media are both an actor in the public sphere, as well as an arena for public discourse, which shapes and influences the access and possibilities for participation. *How* the public is constructed and represented in environmental news is important in relation to principles of deliberative democracy and ideals of a public sphere. Drawing on theories of deliberation and the public sphere, a detailed empirical analysis is presented of different forms of 'participation' and roles for the public as citizens in cases of news coverage of climate change and the use of biofuels.

In Chapter 4, Pavel P. Antonov explores how journalists respond to a citizen-led campaign against the government's plans to reverse anti-smoking legislation in Bulgaria. Changes in the culture of journalism and the professional identities of journalists are traced to the embedding of a neo-liberal discourse in the everyday rationality of post-socialist journalism. Drawing upon Couldry's (2010) work on the loss of 'voice' and Phillips' work on 'dialogue' (Phillips 2011), the analysis shows how the new culture and identities are articulated in the course of the citizen-led campaign against the government's plans to liberalise the

anti-smoking ban in Bulgaria. The analysis is based on data collected during 2009–2010 by means of participant observation of the campaign's press coverage and semi-structured interviews with journalists and decision-makers in two Bulgarian mainstream media newsrooms.

In Chapter 5, Hedwig te Molder addresses issues relating to science communication among online communities. Many practices of science communication by professional science communicators start from the assumption that the publics need or desire the communication offered. However, many communities are *already* talking science and technology, or at least discuss the fields to which these insights apply, often from a non-technology perspective. The chapter applies a discursive psychological perspective, focusing on the *social-interactional goals* performed by the arguments of discourse communities (cf. Potter 1996; te Molder and Potter 2005; Veen et al. 2011). This perspective is applied in analysis of online interactions among patients with celiac disease ('gluten intolerance'), who reject the future pill that was promised to replace their lifelong gluten-free diet. The analysis shows that this 'rejection' was targeted not so much at the pill itself, but at the experts' suggestion that the pill would fix everything. This suggestion was felt by patients to undermine the value of their present life and autonomy.

Chapter 6 by Ashley Andersen et al. is also about online interaction, in this case, online news posts about scientific issues. The chapter presents an account of a study that explores, by way of an online experiment and survey, how Internet users' passive observation of comments on online news posts influences their degree of support for science. Past research shows that those who are heavy users of the Internet are also highly interested in science and technology. In the light of this research, they examine differences across different groups of online users in the effects of online comments on support for science. They do not find evidence that two characteristics of the comments themselves – heterogeneity and incivility – affect support for science. However, they do find that online users are more likely to support science. Furthermore, those who write blogs, read political blogs and read comments attached to news stories or blog posts are more likely to support science when exposed to the heterogeneity of viewpoints in the blog comments.

In reading the studies presented in Part II, the reader should be able to trace similarities and differences across the different formal engagement practices analysed in the chapters and also across the different theories and methods applied in the analyses.

In the first chapter in Part II, Chapter 7, Louise Phillips presents an empirical analysis of how principles of deliberative democracy are played out in communication processes in the deliberations of the citizen participants in a case of consensus-oriented public engagement. The case analysed is the citizen consultation on climate change in Copenhagen, which forms part of the global citizen consultation, World Wide Views on Global Warming. World Wide Views was organised by the Danish Board of Technology and took place in 38 countries including Denmark on 26 September 2009 in advance of the UN Climate Change Conference, Copenhagen, 7–18 December 2009. The analytical framework combines dialogic communication theory, building on the work of Bakhtin on multi-voicedness (Bakhtin 1981),

and Chantal Mouffe's post-structuralist critique of deliberative democracy's emphasis on the need for, and possibility of, reasoned political consensus. For Mouffe, the ideal underpinning deliberative democracy of 'consensus without exclusion' (Mouffe 2000: 48) is illusionary since consensus is always 'the expression of a hegemony and crystallization of power relations' (Mouffe 2000: 49). The chapter focuses both on the ways in which the deliberations open up for multiple-citizen voices and for dialogue across those voices and on the ways in which they exclude voices and construct a unitary and singular national and global 'citizen voice' through the application of a procedure for rational argumentation based on principles of deliberative democracy. The chapter argues for the value of detailed empirical analysis as a foundation for reflexive recognition and discussion of the inexorable workings of the dynamics of exclusion in consensus-oriented communication processes in participatory practices of public engagement with science and technology.

Anders Horsbøl and Inger Lassen focus in Chapter 8 on another case of public engagement in relation to climate change – an initiative of a Danish town council in which citizens take part in processes of public participation designed to achieve 100 per cent reliance on renewable energy in 2015. In those processes, local administrators position citizens as 'activists' in practices based on principles of participation and dialogue. The chapter analyses a series of meetings between citizens and municipality representatives from a discourse analytical perspective, treating the meetings as spaces for discursive negotiation and struggle. The analysis shows that the initiative is infused with tensions between top-down and bottom-up dynamics, and, on the basis of the analysis, obstacles are identified that may discourage citizen participation in environmental matters.

In Chapter 9, Maja Horst analyses a spatial installation that she designed in order to communicate social scientific research in line with the principles of dialogue and participation underpinning public engagement in science and technology; the aim of the installation was to create a space for dialogue about science in relation to central social, cultural and ethical questions. The social scientific research communicated in the installation investigated the social, cultural and ethical aspects of stem cell research and was the work of a Danish group of social scientists. The installation was fabricated as an 80 m² 'gaming board', in which visitors would pass through a number of different rooms, each contextualising stem cell research in a particular way. In each of these rooms, visitors would encounter different dilemmas and questions and be asked to engage by physically marking their preferences or answers. Theoretically, the installation was based on actor-network theory and the installation was designed to let visitors experience the basic axioms of this theoretical framework.

Chapter 10 by Pauliina Lehtonen and Jarkko Bamberg introduces an action research study with a citizen panel that was organised to find meaningful ways for citizens in a Finnish city to affect the development of their neighbourhood. The work of the panel aimed at developing participatory practices by utilising the potential of information and communication technology. In this process, the articulation and mediation of residents' local knowledge to administration was seen as crucial. The dialogical process with the panel

helped the researchers to identify characteristics of interactive online spatial displays, such as interactive maps and simulations, which support the articulation and translation of local knowledge into the domain of planning and administration. In this chapter, Lehtonen and Bamberg propose that online spatial displays have the potential to function as facilitators for the meaningful exchange of knowledge by three mechanisms of knowledge translation: by giving access to information from a perspective that is familiar to residents; by aiding the translation of technical-rational information of public administration for citizens with illustrative visualisations; and by giving residents multimodal means of producing input for administrators and planners.

To conclude then, across its chapters, *Citizen Voices* is designed to provide *both* empirical insight into the extent to which and ways in which ‘citizen voices’ are articulated and heard in different cultural and institutional contexts *and* a range of theories and methodologies that foreground the role of communication processes in the ‘participatory’ mode of governance. The chapters all highlight the implications of particular ways of conceiving and practising communication for citizens’ possibilities for taking a stance and acting on social, political and ethical questions in relation to scientific and environmental developments and problems.

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