

To tell the truth: On scientific counterpublics

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Abstract

Research in the public understanding of science for and against the public deficit model often is based on assumptions of individualism and lay knowledge. That approach to the public is contrasted with a second and third concept of the public. Subordinate networks in diverse social fields can form *counterpublics* when they claim to represent the general public benefit better than the *official* constructions of the public and public interest that are articulated by the spokespersons of the dominant agents of the respective social fields. Among the counterpublics are those formed by subordinate networks in the scientific field. Two cases of scientific counterpublics, their relations with subordinate networks in other social fields, and their alternative concepts of public good, are explored in an effort to develop a broader understanding of the public and publics. Two policy implications, targeted funding pools and the “dissensus conference,” are discussed as possible policy innovations that could be developed in addition to deliberative and consultative approaches such as the consensus conference.

The concept of a ‘public’ with respect to science and technology sometimes is based on two assumptions: the public is composed of individuals (rather than organizations or even networks of organizations) who form opinions about science and technology; and the individuals are holders of lay knowledge in the sense that they lack the expertise of the particular science and technology in question, even if they hold occupational and local knowledge that may be relevant to assessing or interacting with scientific and technological expertise. This understanding of the public is constructed via two primary types of methods: interviews, either with individuals or in quantitative surveys; or some kind of group interaction process, such as focus groups, consensus conferences, or formal debates. In turn, the methods tend to be aligned with differing views of the public. On the one hand, social scientific knowledge can be created, often via survey methods, about the public deficit with respect to expert knowledge and trust in that knowledge; and on the other hand, an alternative interpretation can be constructed, often via qualitative methods, that shows a more reflexive layperson. STS researchers usually articulate the second position with respect to the deficit model of the public and the assumption of expert objectivity and neutrality. However, in developing a critique of the deficit model, the definition of what the ‘public’ is remains a relatively undertheorized doxa shared by both advocates and critics of the public deficit model.

The most influential example of the critical STS position is Wynne’s research, which is epitomized in the case studies of the Cumbrian sheep farmers (Wynne, 1992, 2008). One particular farmer has drawn special attention because he has conflicting identities based on networks that connect him to workers in the Sellafield plant, who do

not wish to have the plant blamed for the radiation exposure, and to more distant farmers, who see the plant as partly to blame. The more distant farmers mistrust the official view that evidence for radiation contamination is from the more recent Chernobyl accident, and they suspect instead that for years the government and industry have not been telling the truth about contamination from the nearby Sellafield plant. The opinion of this farmer is at least partly conditioned by social identities and relations, and the farmer is quite reflexive about the social basis of his opinion. In contrast, Wynne argues, the official knowledge of state and industry tends to cut itself off from such reflexive self-understanding. Indeed, he finds reflexivity to be inversely related to power, and he turns the public deficit model of scientific expertise on its head by drawing attention to the reflexivity deficits among scientists and governments (see also Durant, 2008). As Wynne suggests, the situation generates public mistrust in science, and one way to reduce the mistrust would be for scientists to open up their debates from technical issues of risk assessment to “the proper ends and purposes of knowledge” (Wynne, 2007a: 219).

Although the brief summary does not do justice to more than a decade of complex and thoughtful analysis, it does outline the basic contours of the leading STS critique of the public deficit model and its potential policy implications. The critique of the public deficit model mounted by Wynne and other STS scholars has more than theoretical importance; it has also helped inform and motivate consultative, participatory, and deliberative mechanisms for opening up scientific and technical decision-making to awareness of public opinion if not to actual public participation in decision making (e.g., Dietrich and Schibeci, 2003; Irwin, 2001; Katz et al., 2009; Lezaun and Soneryd; 2007; Yearley, 2000). However, as Wynne has noted, “virtually all of the mushrooming commitment to public citizen engagement” has, to date, been “something of a mirage” (2005: 68). Among the diverse problems recognized in the literature are the restrictive framing based on technocratic understandings of societal problems as reducible to risk and the lack of connection between deliberative institutions and public policy (also known as the ‘weak publics’ problem: Fraser, 1997). The often negative findings do not imply that efforts to democratize science and technology policy are without positive benefits. As Powell and Kleinman (2008) have shown, consensus conferences may be transformative for the laypersons involved, and laypersons may become more involved in politics as a result of the confidence gained in such exercises. However, bringing deliberative institutions to a scale that would transform changes in individuals or small groups into broad public opinion shifts is cost prohibitive. Even if a beneficent billionaire were found to fund a scale shift, one would expect that attempts to connect such institutions to public policymaking would meet with significant resistance, especially if the outcome of public deliberation were to begin to challenge neoliberal models of regulation. As Kleinman, Kinchy, and colleagues have noted, instead of assisting the shift to what they call “social regulation,” industry has pushed for the scientification of regulation and the narrowing of debate to risk assessment (Kleinman and Kinchy, 2003, 2007; Kinchy et al., 2008; see also Wynne, 2007b).

Although deliberative and related experiments in public participation would, in an ideal world, contribute to remedying the democracy deficits of technological decision-making, the power structures of industrial societies inhibit those institutions from performing a democratic role. Would a different approach to the problem of publics and technological decision-making that begins with unequal societal power structures lead to some other ways of thinking about democracy, public participation, and the politics of scientific and technological decision-making? In this essay, I explore an approach that begins with a reproblematicization of the publics of expert knowledge that focuses attention on the counterpublics formed in the interfield connections of subordinate networks in the scientific field and other social fields.

Three Publics and Their Problems

The alternative approach to the public departs from what Polanyi (1994) called the countermovements of society and broadens the concept to include two other publics that can be contrasted with the lay opinion public. (One could, after the television show alluded to in the title, think of them as Public 1, Public 2, and Public 3). It is important to note at the outset that the analysis does not require rejecting the existence of the lay opinion public. Rather, the concept is repositioned as a constructed entity that can be shaped not only through public relations but also through methodological choices, such as the selection of questions that are to be asked in public opinion polls, consensus conferences, or focus groups.

As Bourdieu notes, other forms of the public may also exist, such as “mobilized opinion” (1993: 155), and these mobilized publics will be the topic of exploration here. ‘Counterpublics’ (the second type of public) are understood here as a type of mobilized public opinion that is based on subordinate social positions that have emerged to contest ‘official publics’ (the third type of public). The latter is also a mobilized public, but one constructed by political, economic, and, in some cases, intellectual and civil society elites. In both cases, a public is formed when networks of organizations and individuals make alignments between their sectional interests and the general good by claiming to speak for the society as a whole and its ‘public interest’: that is, what the public is, needs, and should have. This approach to the public builds on a literature on counterpublics that emerged from critical accounts of Habermas’s study (1989, 1992) of the bourgeois public sphere. The literature raised several crucial arguments: the public is not a single entity but composed of multiple publics, including those socially positioned in subaltern social categories; the boundaries between public and private are contestable, and hence the definition of what constitutes the public good or public discourse is included in public deliberation; and the boundaries between the public sphere and the state should not be presumed a priori but left open to analysis and contestation (Asen and Brouwer, 2001; Warner, 2002).

With this background in mind, I employ a somewhat broader definition of the counterpublic that relies on three main shifts of focus. First, counterpublic theory sometimes assumes that the social position of counterpublics is associated with subaltern categories such as “women, workers, peoples of color, and gays and lesbians” (Fraser 1997: 81). In developing the idea of a scientific counterpublic, I require a broader definition of counterpublics that is situated in subordinate positions or alternative pathways (a term that includes social movements but is not limited to them). Rather than assuming that the counterpublic is limited to a social category marked by race, class, gender, or sexuality as an historically dominated or oppressed social category, I will assume that counterpublics can emerge in any social field: civil society, the polity, and the economy. That the relationships between subaltern groups and subordinate field positions are often closely correlated is understood as an empirical rather than definitional claim. Second, whereas counterpublic theory often focuses on the discursive aspects of publics and tends to remain enclosed within a culturalist methodology, I draw attention to the social position of the publics in agonistic social fields characterized by networks of individuals and organizations. Because subordinate positions in social fields are anchored, or at least often anchored, in organizations, they have the capacity to generate both interactional and contributory expertise (Collins, 2007) that is on par with that of the expertise scientific and technological communities. Here, we get at one of the deeper implications of the idea of mobilized opinion that Bourdieu did not explore. Third, following Bourdieu’s critique (1997) of Habermas, the assumption that personal interest must be left behind as a criterion for the ideal conditions of public opinion formation

requires rethinking in light of the capacity for semi-autonomous fields to channel personal interest into the production of relatively disinterested discourse and knowledge. Thus, objectivity does not depend on an assumption of a self-effacing *moi commune*.

When shifting the analytical attention from the individualized, lay opinion public to the oppositional counterpublic, it is possible to maintain a central insight of PUS studies, namely that the study of publics with respect to official expertise must also involve the problematization of scientific authority (Wynne, 2008), while transposing the insight onto a different analytical terrain. In addition to the study of lay individuals who can be interviewed for their mis/understandings of science and, conversely, scientists who can be interviewed for their mis/understandings of public opinion, the perspective outlined here suggests a complementary project of exploring knowledge claims anchored in the subordinate positions of various social fields and the linkages among such claims. From this perspective one can also search for a public in the 'scientific counterpublics' that are formed when the subordinate positions in the scientific field provide the basis for publicity for an alternative view of public benefit. By locating a 'public' of science not only outside the scientific field but also partially within the scientific field, it is possible to deepen work in the PUS studies oriented toward the goal of mutual problematization of publics and scientists.

Furthermore, one should not assume that the institutional location of the scientists in the subordinate networks will be in a university; in the cases below, at least some of the leadership is coming from research that is funded by, and researchers who are located in, nonprofit and civil society organizations. On this point, Moore (2008) demonstrated that scientists can form public interest science organizations, and likewise I have shown that civil society organizations sometimes possess the resources to conduct civil society research, including peer-reviewed science (Hess, 2009b). Regardless of institutional location, a scientific counterpublic is formed when scientists who are located in subordinate positions in their respective research fields generate publicity by addressing a broader public audience about the public-interest implications of agenda conflicts in their respective research fields.

Definitions and Methodology

The terms introduced so far—dominant networks, subordinate networks, scientific counterpublics, and official scientific publics—may require additional clarification. The concepts build on a Bourdieusian framework (e.g., Bourdieu, 2001) that is modified in light of both STS research on scientific networks and counterpublic theory. One of the central conceptual pairs is the tension between dominant and subordinate networks in a field. The definition of dominant and subordinate networks cannot be reduced to an algorithm, but it is possible to identify a set of family resemblances. There are two basic approaches to identifying dominant and subordinate networks in a field. First, one can utilize certain metrics of field-specific capital: does the network have high-prestige institutional positions, access to the best graduate students (therefore controlling the means of disciplinary or subdisciplinary reproduction), a strong record of grantsmanship, publications in the best journals, high citation rates, honors and awards, and control over the leading societies, journals, and prize committees? Second, one can approach the issue ethnographically and, when one has gained the trust of informants in the field, ask them about the politics of the field, which researchers and research areas are dominant and subordinate, and so on. One can also gather stories of intellectual suppression and bias against researchers whose work lies outside the mainstream of the field. Although the latter approach may, when based on long-term ethnographic knowledge, produce a more robust picture of the state of the field than the former method, there is no reason not to use the etic and emic approaches together.

In order for a subordinate network to become a scientific counterpublic, it must attain publicity or visibility in other social fields by speaking out about the politics of research agendas with respect to the public interest. The leaders of the subordinate network may make a claim that there is a systematic distortion of the relationship between research agendas and the public interest, so that the research agendas of the dominant networks do not reflect a broad public interest as well as those of one or more subordinate networks. Furthermore, the subordinate networks in the scientific field are often connected with subordinate networks in the civil society, economic, and political fields and their parallel views that the dominant positions in their fields do not represent a broad societal benefit. As a result, a cross-field linkage is formed in a full-blown scientific counterpublic. Although the extent of such linkages can be explored empirically, behind the confidence in the view that the linkages exist is a broader theory of societal power differentials that is consistent with the political sociology of science (Frickel and Moore, 2005) and a Polanyian view of social change. This does not mean necessarily falling back on a structuralist methodology (such as in the Frankfurt School or the interest studies of the Edinburgh School) in which class relations have some kind of ultimately determining role as a causal shaping factor. One can also approach the broader relations of power differentials across fields from a methodology of homology analysis, which recognizes the relative autonomy of intellectual fields (e.g., Bourdieu, 1981).

Another set of qualifications is necessary in the context of an interdisciplinary audience not familiar with the central concepts of STS. One might ask, are subordinate networks there because they represent 'bad science' or 'failed science'? The goal of an STS approach is not to assume that the emergence of scientific counterpublics is only the grumbling of researchers whose work has not survived the empirical scrutiny of their peers. Conversely, one should not assume a priori that scientific counterpublics have a privileged access to an undistorted scientific truth that has been biased by political and economic influence on the dominant networks. The dominant networks of a field are likely to supply the first asymmetrical and partial reading, just as subordinate networks are likely to supply the opposing reading. In the strong program tradition it seems prudent for an STS analysis as a starting point not to presume a priori that one or the other interpretations is correct. However, as we know from the work of Brian Martin and colleagues (e.g., Scott, Richards, and Martin, 1990), attempts by social scientists to study a controversy, even in a symmetrical way, are often viewed as siding with the subordinate party. Rather than ignoring the 'captives of controversy' problem, one might recognize that there may be some role for STS researchers to play a corrective role in scientific and technological policymaking. Although the analysis might begin in a neutral mode, the conclusions might suggest an STS-inflected intervention, which, rather than pronouncing a verdict directly on a technical controversy, makes the case that an area of undone science has been identified and that there is a need for rebalancing research portfolios and creating policies that take into account the views of the subordinate networks about funding diversity. This latter strategy will be pursued in the conclusion section.

A third area of qualification involves the social factors that could explain the emergence of scientific counterpublics. Although the problem cannot be answered without extensive research, a few hypotheses that do not rely a priori on superior or inferior knowledge can be articulated as starting points. It is likely that scientific counterpublics emerge with the greatest frequency in the low-autonomy research fields, such as the social sciences and medicine, in contrast with the high-autonomy research fields, such as mathematics. Furthermore, within each research field there is generally a distinction between the producer-oriented pole, which tends to be more autonomous

because of its epistemic involution, and the consumer- or user-oriented pole of each field, which tends to be less autonomous because of its orientation toward consumers of the knowledge located outside the scientific field (Albert, 2003). The consumer-oriented pole is often shaped heavily by funding flows, which come primarily from industry and government, but it can include research that responds to the articulation of areas of undone science by civil society and social movement organizations. Thus, even within high-autonomy fields, positions in the consumer-oriented pole may be likely sites for the formation of scientific counterpublics.

With these definitional and methodological qualifications in mind, this study will explore two cases where a scientific counterpublic is formed. Each topic is based on years of fieldwork with many formal interviews and informal conversations, attendance at conferences, and extensive review of primary sources. The cases explore the position of subordinate networks in the scientific field, relate them to extrafield positions, and discuss the alternative conceptualizations of the public interest that emerge from the relationships.

Bacterial Theories of Cancer

The tremendous success of bacteriology in the late nineteenth and early twentieth centuries led to the expectation that cancer was an infectious disease, but by the 1920s the hypothesis that bacterial infections were the primary etiological agent in most of the common cancers had fallen out of favor. A more diffuse, multicausal approach that included inheritance, genetic damage, and viral infection slowly came to be accepted among the dominant networks of the cancer research field. Research programs informed by the bacterial hypothesis did not disappear but were instead carried on by a diffuse network located in subordinate positions in the cancer research field (Hess, 1997). For example, the physician Virginia Livingston, who led a network of researchers from the 1950s into the 1990s, claimed that she had isolated a bacterial agent for cancer. Their work appeared mostly in lower-status journals that tended to minimize the potential for wider awareness within the research field. She and her colleagues were also located institutionally in lower-status positions in the academy or small, independent research organizations linked to clinics. In this sense, their work formed a subordinate network in the cancer research field.

The parallel but different history of dramatic changes in the understanding of the etiology of gastric ulcers that occurred during the 1980s and 1990s demonstrates that it is possible for bacterial etiologies to regain dominance in a medical research field that has rejected them. On the surface, the prospects for the challenge in the ulcer field were dim; like the cancer-and-bacteria network, it came from a subordinate position in the field: a pathologist and resident who were located in a small hospital in Perth, Australia (Monmaney, 1993). However, there were two central differences. First, the ulcer researchers identified a single, stable bacterial agent (*Helicobacter pylori*), whereas the Livingston group and other advocates of the bacterial etiology of cancer worked with an assumption of pleomorphism (bacteria could undergo significant changes of form) and claimed to have discovered a new species in the mycobacterium family. However, the hypothesis of bacterial variation was controversial among bacteriologists and medical researchers (Amsterdamska, 1987, 1991). In the case of the bacterial networks in cancer research, the hypothesis was a double-edged sword: it could explain the capacity of researchers to culture a wide range of bacterial forms from tumor samples as well as their failure to converge on a single, stable bacterial species, but it weakened attempts at replication and conversion of the research into medical products.

Second, in the case of ulcer research the dominant networks in the research and therapy fields had embraced a theory of psychosocial stressors. That theory could be

made compatible with the bacterial hypothesis, because stressors enhance immune system vulnerability to chronic infection. Moreover, the challengers in the ulcer research field did not link the new etiology directly to an alternative therapy. As the consensus in favor of the bacterial etiology grew, the pharmaceutical industry adjusted to the science by expanding antibiotic treatments and proton pump inhibitors. In contrast, the Livingston network developed autogenous bacterial vaccines and a special diet, which they treated as alternatives to conventional cancer therapies.

Although the Livingston network remained in a subordinate position in the medical field, eventually the work became embedded in the emerging professional reform movements of complementary and alternative medicine (CAM) practitioners. The CAM reformers were much more oriented toward nutritional, physico-manipulative, and mind-body interventions, but CAM practitioners such as naturopaths, chiropractors, and some unorthodox medical doctors also paid a great deal of attention to gut bacteria and cryptic bacterial infections as agents of chronic disease. Another source of support came from patient advocacy groups that supported more access to less toxic and/or CAM cancer therapies; the movement leaders consistently supported bacterial vaccines as one nontoxic approach to cancer treatment and an area of undone science that deserved further support from funders (e.g., Moss, 1989). Thus, networks of organizations and individuals located in subordinate positions in both the therapeutic field and civil society supported this heterodox research program or at least further research funding for it.

In contrast, the dominant networks of the biomedical industry for cancer had stabilized in favor of genetic disorganization theories and therapies based on the principle of tumor destruction or removal via radiation, surgery, or chemotherapy. Likewise, the largest nongovernmental patient advocacy organizations in the cancer field in the United States frequently had direct financial linkages to the mainstream pharmaceutical and health-care industries, and leading organizations such as the American Cancer Society also helped to suppress alternative cancer therapies.

Frustrated by the lack of funding and recognition for her approach to cancer etiology and treatment, Livingston's network became part of a broader scientific counterpublic that emerged in the cancer research and treatment field to protest the focus of cancer treatment on chemotherapy, surgery, and radiation therapy. The movement crested in the 1970s and 1980s, when it demanded more research and more access to less toxic cancer therapies. It subsided with the growth of "integrative" cancer care in the 1990s and the formation of the National Center for Complementary and Alternative Medicine. Livingston's network and the other networks associated with the bacterial etiology theory, together with patient advocacy supporters and the health professionals who also occupied a subordinate position in civil society and industrial fields, constituted a counterpublic in the sense of articulating a general public interest that was in opposition to the dominant conceptualizations of public interest associated with a therapeutic industry based on an irreversibility principle that guided the use of toxic therapies. As she wrote in a popular book:

Let us hope that freedom will extend to all men in the scientific field who have something to offer his fellow man that is not surgically obliterative, chemically poisonous, or destructive of body tissues, therapies which can make the healing process impossible. I am sure that there are many safe and effective modalities in this world that can be sought out for the treatment of the suffering cancer patient. Let us not become an army of obedient, industrious peons completely under the control of an elite medical and political regime where each man's duty is to mouth praises of his oppressors who have the power of life and death over him, dictating whether he should or should not be born, the manner of his life

upon the earth, and his method of exit out of this life as a sacrifice to government-controlled science. We must be guaranteed enlightened freedom under God and under our Constitutional rights to govern our own lives and to make our own choices (Wuerthele-Caspe Livingston, 1972: 225).

In this passage, what might be configured as a controversy, failed network, or alternative pathway within a biomedical field becomes something more. Livingston is positioned here as a public figure, as a person who is part of a counterpublic that has formed in opposition to the dominant networks of the fields of cancer research and treatment.

This brief discussion suggests the value of a view of the public that would not automatically send the researcher to an exploration of lay opinion in the form of, for example, a patient who is trying to make sense of a bewildering array of conventional and unconventional treatment options or even a leader of a lay advocacy group. Instead, there is another public here, one that is articulated in the subordinate networks of the scientific, biomedical, and patient advocacy fields. It is an open question, at least in my mind, whether the 'truth' that they tell is 'correct'; not because I adhere to epistemological relativism but because the research questions remain undone science. New research emerges monthly on the role of bacterial infections in chronic disease, and the funding flows were never directed to explore a wide range of nutritional and immunological approaches to cancer etiology and treatment. Middling positions may emerge, such as recognition of a more central role of cryptic bacterial infections as a facilitating factor in carcinogenesis. But the bacterial etiology advocates, the CAM professions, and the CAM-oriented patient advocacy organizations do not need to claim that they have the 'true' version of cancer etiology and treatment that has been repressed historically and will be vindicated by future research. Instead, they can tell a different, more sociologically nuanced kind of truth: they can argue that a public interest would be served by devoting more resources to exploring the heterodox hypothesis and alternative technology but that organizational interests have blocked the potential for the alternative. Similar to Wynne's farmer, some of the work, such as that of patient advocacy leader Ralph Moss, is quite sophisticated in a sociological sense of understanding power and knowledge in the biomedical field and the professional and industrial interests that have blocked the potential for more effective and less costly trajectories. But the capacity for Moss, Livingston, and many others for making such analyses stems from their social and intellectual position as part of a mobilized public, in the sense of a network of individuals and organizations with the capacity for interactional and contributory expertise. More generally, in the process of articulating an alternative view of the public interest, these networks have, over time, suggested an area of undone science that, if converted into 'done' science, would potentially be of great social benefit. From their perspective, a public interest that is supposedly served well by conventional cancer research is in fact not being served well; instead, the therapeutic trajectories have resulted in a history of incremental improvements on ineffective therapies with severe side effects.

Localist Economic Development

The second case involves economic development as an applied social science and public policy field. After the Great Depression, exports from developing countries declined, and some countries, especially in Latin America, adopted an approach to economic development that became known as 'import substitution.' Support for domestic manufacturing as a substitute for imported manufactures was instituted via currency policies, industry subsidies, and import duties, and the policies were associated with relatively healthy economic performance during the 1950s and 1960s (Portes and Roberts, 1995). However, just as most mainstream medical researchers today view the

bacterial etiology theory as a failure, so most mainstream economists today view import substitution policies and the theory behind them as a failure. The policies created various dislocations, including inflationary pressures and, where price controls were in effect for agriculture, problems with domestic agricultural markets. Meanwhile, some of the Asian countries experimented successfully with the alternative export-oriented development strategy, although often with considerable support from national governments for domestic industry. The alternative to import substitution—trade liberalization and export-oriented growth—became the dominant approach of economic policies. Although to some degree the transition was forced on developing countries via the structural adjustment packages of global financial institutions, it is also the case that in some countries, such as Mexico, there was a much more voluntary transition in the national economics profession and national policy (Babb, 2001; Stiglitz, 2002).

Meanwhile, for cities in industrialized countries such as the United States, trade liberalization weakened the competitive position of Fordist manufacturing and made it attractive for manufacturers to relocate to countries with lower labor costs and environmental standards. As a result, urban economic development thought and policy increasingly shifted away from “smokestack chasing” to policies that developed high-technology, export-oriented clusters of industrial firms modeled on Silicon Valley. Economic development professionals and politicians still sought high-profile recruitment projects, such as enticing a computer chip manufacturing company to relocate to a region, but increasingly the emphasis was on the slower but steadier project of encouraging technology transfer from universities and start-up companies. In addition, they attempted to recruit large retail outlets such as big-box stores, which were presumed to provide jobs and a source of tax revenue for the local government.

In contrast with regional and local economic development based on export-oriented industrial manufacturing and global retail chains, a subordinate network of researchers and advocates continued to develop an approach to economic development based on import substitution principles. With respect to urban economic development policies in the United States, the urban studies researcher Jane Jacobs (1969, 1984) argued for the potential of import substitution as a strategy of economic development, and David Morris of the Institute for Local Self-Reliance advocated import substitution and local ownership as an alternative approach for economic development (Morris, 1982). Positioned outside mainstream departments of urban planning, economics, and policy, their views were influential among subordinate networks in some local policy fields but found little traction in scholarly research circles. My review of all abstracts published in *Economic Development Quarterly*, the leading scholarly journal for regional economic development research in the United States, revealed dozens of studies oriented toward clusters and high-tech manufacturing but only two that explicitly developed and defended import substitution (Persky et al., 1993; Cobb and Weinberg, 1993). Likewise, a similar review of a second publication, the *Economic Development Journal* (the leading journal for practitioners), revealed many articles dedicated to clusters and high-tech manufacturing but nothing on import substitution. This external metric corresponds well with informal statements from advocates of import substitution in the fields of economic development research and practice, who find little interest in the topic from economic development practitioners and often local politicians as well. In this sense, research on import substitution within the economic development field occupies a subordinate position, both in the research field and in the policy fields that are dominated by urban growth coalitions. Import-substitution approaches to business development in the retail and food industries, which focus on building up the sector of locally owned, small businesses and farms, tend to be lumped with the ‘community development’ studies, which include microfinance, minority and low-income business development,

and neighborhood revitalization. Organizations such as the Community Development Society do provide an academic forum for such research, but over time the broader economic development field has moved away from concern with those issues (Kossey, 1996).

Although research oriented toward import substitution and the development of small, locally owned businesses ('localism') occupies a subordinate place in the field of economic development research, interest in such research has grown outside the academic research field. Over 100 independent business organizations have emerged in the United States since the 1990s, often in response to the rise of big-box retail and the industrialization of the food supply. The independent businesses have sponsored research projects, generally conducted by independent consulting firms and institutes rather than university-based scholars, that demonstrate the value of shifting the retail portion of local economies toward local farms and businesses (reviewed in Hess, 2009a). Their studies show that when one spends \$100 at an independent store rather than a chain store, about twice as much of the \$100 recirculates in the local economy than does when the same amount is spent at a chain store. The higher level of recirculation occurs because locally owned, independent stores, service businesses, and farms donate more to the region, retain profits in the region, pay more local taxes, and buy more from other local businesses. The studies are used to support economic development policies that favor boosting the locally owned, independent sector of the economy and finding opportunities for import substitution in local economic development policies.

Much of the recent research in support of an economic development pathway that is based on building up locally owned, independent businesses that serve local markets (a combination of localism and import substitution) is brought together in *The Small-Mart Revolution*, by Michael Shuman, an attorney, economic development specialist, and localist movement leader. In the book he defends "local ownership and import substitution" (LOIS) as complementary to the TINA strategy ("there is no alternative," a phrase associated with the neoliberal policies of Margaret Thatcher), which builds an export-oriented manufacturing base in a narrow but vulnerable range of industries. He notes that the profession of local economic development experts prioritizes exports and spends "millions of dollars to keep TINA businesses" (2006: 52). He suggests that the LOIS strategy can be complementary with export-oriented manufacturing, but he adds that there are "many reasons to favor" import substitution (2006: 52). Citing pro-import substitution economists such as Thomas Michael Power (1996), Shuman argues: "Development led by import replacement rather than export promotion diversifies, stabilizes, and strengthens the local economy" (2006: 54). As would be expected, the response from the dominant networks of the economic development field to the challenge represented by such alternative approaches to economic development varies, but in some cases it has been quite negative (Mitchell, 2009).

Work by Shuman and other researchers who document the benefits of an import substitution approach to economic development circulates in broader fields and becomes part of a critique of mainstream economic policies as failing to serve a broader public interest. Independent business organizations and local food groups across the United States and Canada have embraced the research and made it part of their reform campaigns. The leaders of umbrella organizations such as the Business Alliance for Local Living Economies (BALLE), the American Independent Business Alliance (AMIBA), and Sprawl-Busters argue that a broad public interest would be served by shifting economic development strategies toward regional economies with more small businesses, locally owned retail, and local food networks. They question the

environmental and quality-of-life implications of a concept of development based on big-box shopping centers and high-tech manufacturing clusters. As Shuman writes,

The Small-Mart Revolution can be the beginning of a new grassroots declaration of independence, and across the United States there are powerful signs of its taking hold....New BALLE and AMIBA chapters, bringing together local businesspeople, are being formed at a rate of one per month. There is hardly a commercial district in the United States that doesn't have some sign encouraging people to buy local. Once most of us understand that LOIS businesses are the best contributors to our community well-being, that most of our own goods and services can be competitive with global alternatives, and that our own public policies are unnecessarily killing our own businesses, we will be able to make our stand against TINA's vision of globalization. And we will build. (2006: 222).

Again, what might be configured as a controversy within a field of research and policy over the value of import substitution policies for economic development has become something else. A scientific counterpublic is built in the cross-field alignments of the subordinate networks of a social scientific research field (import-oriented and localist economic development research), the opponents of growth coalitions oriented toward big-box shopping centers and export-oriented manufacturing, and the supporters of locally owned, independent businesses. This is a very different type of public than the one that could be constructed from an interview with an ordinary small businessperson or shopper about such views of economic development.

The counterpublic draws on scientific research that occupies a subordinate position in a research field, but it is linked to agents who are also in subordinate positions in the civil society, economic, and political fields. It is in these extrafield linkages that the scientific counterpublic is formed. The scientific research—especially the frequently cited studies about the recirculation of money to local economies—is discussed widely in the various civil society and economic networks. This mobilized counterpublic in turn becomes politically active in local conflicts over zoning, tax, and infrastructure decisions of a region and its economy.

Conclusion

Although the title of this essay makes reference to the television show “To Tell the Truth,” the argument does not assume that STS work on the lay opinion public is inaccurate in a descriptive sense. The assumption of lay individualism and/or lay knowledge that is behind some or even much research in PUS studies has yielded significant returns. Instead of rejecting such work, I suggest that the line of inquiry can be situated in a broader framework for studying constructions of the public and publicity, including mobilized publics. By assuming the lay opinion public as the primary referent in the discussion of publics, PUS studies may turn knowledge about this particular public into knowledge about *the* public, even though there is widespread recognition that lay opinion is often volatile, uninformed, and manipulated. Instead, a deeper understanding of the politics of publics would require pluralizing the concept of the public, but in a way that does not replicate the lay opinion model by fragmenting it in a limited set of subaltern or other social identities.

The alternative suggested here locates the study of science and its publics in the articulations of general public benefit by subordinate networks across the social fields of science, politics, the economy, and civil society. The researchers themselves may be located in diverse positions: independent (as in the case of Livingston, who drew most of her funds from her clinic), based in universities (as in the case of Persky and Powers, but not necessarily with extramural funding for their alternative research programs), or in civil society organizations (as in the case of Shuman, Morris, and other localist

researchers). Together, researchers in diverse institutional positions form a scientific counterpublic that advances the need for a change in research agendas and in broader public policies (such as greater openness to nutritional and bacterial therapies or a shift in economic development policies to favor LOIS businesses). They are also linked to subordinate positions in other fields (such as the CAM professions and patient advocates in the medical field and the small, independent businesses in the local political and economic fields). The scientific counterpublics draw attention to the assumptions of the argument for public benefit that is articulated in the alignments that the dominant networks produce between their goals and broader societal benefit. By opening up the question of who best 'represents' the public and its interests, the subordinate networks raise questions about the credibility of official public alignments and suggest alternative pathways in science and society.

Whatever one's evaluation of a theory of the scientific counterpublic and social fields as a framework for research, its capacity to draw attention to the twin assumption of lay individualism in PUS studies may have value in itself because of its policy implications. For example, much attention has been given to the use of deliberative institutions that select a sample of lay people as an avenue for enhancing the democratic participation of the public in science and technology policymaking, but the institutions can be set up to exclude counterpublics. As Lezaun and Soneryd (2007) noted, some deliberative institutions have been designed to separate the 'ordinary' lay public from activists and others who might have already formed opinions and some degree of expertise. I would add that by constructing a definition of the public that excludes social movement leaders and researchers who contest the dominant pathways of industrial development, the deliberative institutions create a nonlevel playing field for the construction of the lay opinion public. By separating the lay opinion public from mobilized counterpublics, the lay opinion public is more easily aligned with official publics. Thus, some patterns of constructing deliberative institutions may do in practice what some STS researchers do in theory: participate in a construction of the public that separates out the claim to best represent the public that is voiced by counterpublic leaders.

There are various alternative policy models that might bring more attention to the perspectives of scientific counterpublics; two possible models are discussed here. In the funding field, one might allocate a portion of public research funding to a competitive funding process that would seek to identify areas of undone science. The allocation might be similar to the small percentages of research funding that are sometimes designated for "ELSI" (ethical, legal, and social implications) research. By 'undone science' I mean areas of research identified by social movements and scientific counterpublics that potentially address questions of a broad public interest but receive systematic inattention within the relevant research fields. To identify those areas and eliminate wasteful expenditures, one might request that the subordinate networks document the following claims: 1) that the allocation of additional funding to their identification of areas of undone science would result in broad social benefit (that the stakes are high; see Yearley, 2000); 2) that research funding has been hard to obtain due to interests of dominant agents in the industrial and political field, and that the blockages can be documented; and 3) that a subordinate network of researchers has done enough preliminary research to suggest that the research programs are in some sense doable. One could also limit the type of research according to other criteria, such as secular goals oriented toward enhanced environmental sustainability and social fairness. Such a process might not end up selecting either of the examples discussed above, but it might select similar examples, such as research on nutritional therapies for

cancer or on understudied areas of environmental risk, safety, and hazard for suspected carcinogens.

A second alternative model is oriented toward the fields of policy deliberation and public participation in policymaking. Here, instead of holding a consensus conference, one might hold a 'dissensus' conference to draw attention to and analyze the perspectives of a scientific counterpublic. The object of the conference would not be to produce a report that provides input from a random selection of laypeople into a technical decision but instead to produce a publicized controversy that draws attention to the power-knowledge issues in a given scientific field. Thus, the conference would assemble a panel of stakeholders: leaders of dominant and subordinate networks in the scientific field, potential funders, journalists, civil society and social movement representatives, industry representatives, and regulators. Had such a conference been held in the case of Sellafield, it might have quickly revealed evidence of government malfeasance and cover-ups as well as a subordinate network of government researchers who believed that there had been long-term contamination of the local site. Given the potential political fall-out of a dissensus conference, bureaucratic capture is a problem that organizers would need to guard against. For example, if a congress or parliament were to mandate that its national cancer research program hold such an event, manipulation and capture would likely ensue, much as has happened with the National Center for Complementary and Alternative Medicine in the United States. Consequently, some sort of quasiautonomous institution would be required to convene such events, such as a private foundation or independent government agency. It would review proposals from scientific counterpublics that would like to see greater public resources made available to vet their claim for the public benefit of reallocations of research portfolio funds. In a sense, the general phenomenon of agenda conflicts (over which research programs are worth pursuing) and object conflicts (over which technologies and products should be released) that I have outlined in this essay would be partially institutionalized.

The point in mentioning these two policy implications is not to develop a full-fledged sketch of two new directions for policy. There are many possible problems that would need to be worked out, and other models might also be created. One problem requiring consideration would be how to ensure that a dissensus conference does not fall victim to the same 'weak counterpublics' problem that has been identified for consensus conferences. High visibility with journalists sitting on the panel is one possible solution, and the drama of having subordinate and dominant networks debating together in a room would likely draw journalistic and media attention. Another problem is determining how to get a representative sample of a scientific counterpublic when composing a dissensus conference. Here, one might begin with some of the insights from structural analyses of science and social movements, which point to the need to take into account various types of civil society organizations, such as industrial opposition movements and alternative industrial movements (Hess, 2007, 2010).

The proposals discussed above are not intended to serve as alternatives to existing deliberative and participatory institutions but instead to suggest that a broader concept of the public might lead to policy innovations based on an agonistic rather than deliberative approach to public participation. More generally, my concern is to propose that the definition of the public as lay opinion that can be accessed by focus groups or deliberative institutions is a limited way to construe the publics of technological decision-making, and we might want also to include the contentious articulations and counterarticulations of the public in diverse social fields, in which subordinate networks claim to speak for a broad public interest by challenging the status-quo arrangements articulated as official publics. The airing of conflict and contention could have

ameliorative effects on society by creating the conditions for a stronger objectivity and more robust democracy (Harding, 1998). Thus, the value in rethinking the public with respect to science and technology is a capacity to question assumptions that could lead to a range of new social science research projects and proposals for policy innovations.

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