How Public is Public Enough? Communicating Nuclear Safety in the Soviet Union

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Abstract

What we mean by "risk" today is neither necessarily the same as it was a few decades ago, nor was the topic of risk (or safety) of equal significance at all times. Risk perception and awareness are connected to social structures (M. Douglas), as well as to technological potential (U. Beck). In accounting for historical changes affecting these concepts, the importance of the social, economical, and political context becomes evident.

Deciding about the acceptability and limits of risks is a fundamentally political activity that cannot be studied fully without taking into account the nature of the interaction between scientists, policy makers, and "the public." The Soviet context of risk communication is at the same time distinct and similar to that of liberal democracies. Similar, in that scientists faced the same technological challenges, and policy makers had to make decisions facing the same uncertainties. Distinct, because scientists – albeit subject to party control – were freed from tedious negotiations with a potentially recalcitrant public.

The changes and continuities that influenced the uses of concepts like "risk," "expertise," and "the public" in the popular-scientific media discourse on nuclear power in the Soviet Union reveal not only how Soviet scientists and policy makers dealt with uncertainties. They also shed new light on our own practices of handling risky technologies, and allow us to address the advantages and disadvantages of participatory, transparent decision-making procedures from a new and provocative perspective.

In my current research project, I investigate the popular-scientific media discourse on nuclear power in the Soviet Union. Using a selection of Soviet and post-Soviet periodicals, I trace the changes and continuities affecting such concepts as "risk," "expertise," and "the public." While these concepts can be separated for analytical purposes, they are mutually determining and even constitutive. In this paper, I want to explore these connections by disentangling the concepts of "risk" and "the public." The way something is being framed as either a risk or an uncertainty implies different ideas of a public. Therefore, I will engage with the following questions: Was a debate as such a viable option in the Soviet context? Was it even an option for Soviet nuclear physicists and engineers, as well as policy makers and state/economy planners, to take into account potentially disagreeing actors? How was a debate different in a command-administrative economy with a one-party system, and in a liberal-democratic state?

The media analysis I am conducting on the way civilian nuclear power was presented shows that there was in fact something like a debate, albeit a debate with specific features and constraints. One of my goals is to identify and position the actors involved in this debate. Apart from the journal editors, authors, and protagonists, I am interested in how Soviet citizens were imagined. What was the envisioned role for those who were meant to benefit from nuclear power? What were the public's options? Which "models of agency" were assigned to the readers, the citizens, "the public?"

In the following, I would like to expand Brian Wynne's notion of "models of agency" by introducing Yaron Ezrahi's concept of "the public" in the context of distinct political regimes (Ezrahi 1990; Wynne 1995). I also want to explore the role of performance both as technical operation and as public spectacle. My title ("How public is public enough?") refers to both the connection with risk research ("How safe is safe enough"), and the increasing impulse among risk researchers and risk policy makers to think about and to involve "the public" in various ways. I will provide some examples from my analysis of Russian media texts to illustrate my point. This will allow me to address some of the questions guiding the Summer Academy by indicating significant parallels and relevant differences to ongoing debates about public participation.

Theoretical roots

In 1982, the anthropologist Mary Douglas and the political scientists Aaron Wildavsky published their influential essay "Risk and culture" (Douglas and Wildavsky 1982). Their argument was that what counts as risk cannot be assessed in terms of calculations and

probabilities, but rather has to be seen as a function of social structure. What people perceive as risk is different according to the respective social organization they are part of. Douglas and Wildavsky distinguished three main groups that varied according to "grid" and "group," categories referring to the internal structuring and to external boundaries: hierarchists, entrepreneurs, and sectarians. While the first groups perceived risks like crime and the market as most threatening, the category of the sectarians was meant to explain the phenomenon of the emerging environmental movement in the United States. This approach came to be known as "cultural theory of risk," and has been developed and refined, but also criticized over the past decades. Its crucial contribution lies in the recognition of factors other than scientific and technical parameters for the assessment of risks. Its major shortcomings include a rather static concept of group perceptions, and the lack of explanation for how somebody becomes a member of their groups, or when and whether someone counts as a member or considers herself a member. Although several authors have introduced some modifications (cf. Rayner 1992), the theory's challenge remains to explain historical change and shifts in affiliation.

Just four years later, in 1986, the sociologist Ulrich Beck published his "Risk society" (Beck 1986, the first English translation appeared in 1992). In this book, he argued that modern industrial societies bear qualitatively new risks; risks that transcend older forms of social stratification and inequality. In contrast to Douglas and Wildavsky, distinct risk *perceptions* in his model are less important than the objective increase of risks presented to humanity by modern industrial societies. Therefore, Beck has been charged with a renewed risk objectivism. One could also argue that Beck extends "the sectarian's perspective" to a general condition.

An historical analysis of the concept of risk, and of its applications in specific cultural, social, and political contexts, allows for the investigation of the "models of agency" for the actors involved that are implied by any theory of risk (for one suggestion cf. the preface to Krohn and Krücken 1993). The concept of "models of agency" was introduced by Brian Wynne and refers to the implicit (and rarely explicit) visions of "the public" in the more general context of Public Understanding of Science. Wynne criticized much of contemporary policy making and science popularization for adhering to a "deficit model" of communication. In a polemically exaggerated version of this model, "the public" is envisioned as a largely ignorant, irrational, and potentially resistant mass that is in need of scientific information, explanation, and education; information which will eventually make them "see the truth." In stark contrast to the scientific and technical experts, the public's actions are confined to those

of a passive receiver, a *tabula rasa* in need of the expert guidance for correct thinking and acting. Disagreement with or resistance to expert advice are understood as irrational and deviant in this model. Wynne is aware that any communication involves perceptions of an audience, or a public, and that it is unavoidable, therefore, to impose models of agency on one's listeners, readers, or spectators. Instead of the unidirectional, homogenous deficit model, however, he proposes models that envision a public with various and sophisticated forms of expertise of their own, a public that is not irrational but a resource for different rationalities that can affect initial risk assessments in meaningful ways.[1]

Celebratory and Attestive Publics

In his book "The descent of Icarus: science and the transformation of contemporary democracy" the political scientist Yaron Ezrahi lays out the complexities of the inner mechanisms of contemporary liberal democracies (Ezrahi 1990). He combines a comparative with an historical perspective, and pays special attention to the role of science (and technology), and of the public. His central argument is that scientific knowledge is being used as a powerful rhetorical resource to legitimate public action in a liberal democracy. This process of legitimization involves publicly accountable expert decision-makers and an attestive public who mutually confirm each other's function. Scientific and technical knowledge is called upon to authorize decisions that can be assessed and evaluated by subjecting them to the test of "actual performance."

Decisions acquire their rational character through such legitimatory processes. Science is regarded as a guarantor for democratic access to these decisions: while the knowledgeable few decide, they decide in public, and their actions can be observed, understood, and replicated by anyone. Scientific knowledge, which is thought of as fundamentally egalitarian by virtue of its accessibility to everyone, lies at the basis of public actions, which are thus rendered democratic. The structures of the production of scientific knowledge are thought to correspond to liberal-democratic values.[2] Scientific knowledge can therefore be summoned to rationalize freedom, a process Ezrahi refers to as *instrumentalism.* Instrumentalism solves the dilemma between individual freedom and social order by depersonalizing (or externalizing) politics, by establishing performance (in the sense of

[1] It is important to mention that these models of agency are part of the imagination; nevertheless, they are powerful tools that actually transform what they pretend to just observe (for a more complete treatment of this phenomenon cf. Scott 1998).

realization) as the central test criteria, by rendering failure publicly observable, and by legitimizing decisions through actions and their consequences (pragmatism). Critiques of instrumentalism attack its lack of moral considerations, and its emphasis on pragmatic action and the effectiveness of an action's consequences rather than on the legitimacy of its source. Ezrahi maintains that even when it is just a ritual, these legitimatory processes which he refers to as democratic instrumentalism force political actors to publicly defend their actions against the potential criticisms, and thus significantly constrains arbitrary action (cf. Ezrahi 1990, 35).

His book is motivated by the perception that this unique relation between scientific knowledge and social order in the United States is undergoing dramatic changes. A liberal democratic polity where successful performance and pragmatic action, instrumentalism and an attestive public have been the crucial mechanisms for ensuring legitimacy is gradually giving way to some kind of postmodern democracy. The polity is being transformed into a "symbolic equilibrium," an action- and consequence-oriented politics (instrumentalism) is being substituted by a gesture- and source-oriented politics. The vocabulary and the metaphors of art—including pop art and kitsch—replace those of science and technology for the description of public action. The distinction between the many attestive spectators and the few knowledgeable performers increasingly loses its significance, giving place to a state of equilibrium where the spectator is disestablished (Ezrahi 1990, 269), and replaced by reflexive individuals who freely trade positions as observers and performers. It divides the polity into a few competent performers and a multitude of spectators or witnesses (cf. Ezrahi 1990, 279).

Ezrahi carefully distinguishes the "attestive model" of interaction between the state, science, and the public, from what he calls the "celebratory model." The celebratory model, which he regards as specific for monarchies and totalitarian states, was the historical predecessor of the attestive model, and it held clearly defined roles for an almighty king or dictator and a "celebratory public."[3]

> Unlike democracy, totalitarianism constructs politics on the fantasy of certain knowledge, total control, and no risks. It enlists epistemological optimism to rationalize sacrifices as worthy investments in a better future and to justify the centralization of

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[2] This, of course, resonates with early sociology of science (e.g. Merton 1973; Polanyi 1962).

[3] In the face of the descent of the attestive model in America, Ezrahi strives to identify distinctive features throughout this process, but it is difficult to not see the two ideal types (the liberal-democratic and the totalitarian) share certain features. While he concedes that the celebratory and the attestive visual code are not always easily distinguishable, he does not explore this idea further.

> political power in instrumental terms. Moreover, where totalitarianism aestheticizes, mystifies, and absolutizes authority, democratic attestive visual orientations tend to deaestheticize, demystify, and relativize it. (Ezrahi 1990, 91)

While both liberal democracies, and monarchies or totalitarian regimes might draw upon science and technology as rhetorical resources legitimizing public action, Ezrahi locates the key distinction between the liberal democratic and the monarchic/totalitarian model in the role that is assigned to the public. The options available to the public in these two models are distinct, even though celebrating and attesting are sometimes difficult to neatly set apart, or are even consciously blurred in some instances.

Applied to the context of Soviet popularization of nuclear power, it was during Mikhail Gorbachev's policies of *glasnost'* and *perestroika* when environmental groups formed and actually articulated their concerns and opposition to state plans. But the main question sets in even before this "actual" public came into view, before Soviet citizens started to experiment with their options to disagree, to dissent, to protest, or even to resist. This question is: had the public been assigned any role at all? If so, which one? And how are such roles being assigned? In order to address these questions, I need to discuss briefly the concept of public performance.

Public Performance

As mentioned above, Ezrahi maintains that legitimatory processes that draw upon scientific knowledge need a public *performance*. In its literal meaning, performance refers to a rehearsed spectacle presented on stage, with clearly assigned roles for actors and spectators. In a more general meaning, texts or arguments can be performative as well, in the sense of achieving certain results, e.g. persuasively influencing opinions (Hilgartner 2000; Jasanoff 1990). But "performance" also refers to the workings of a device, emphasizing its actual working and smooth operation. The theatrical and the operational version of performance tend to blur upon closer scrutiny.

In order for political decisions to acquire public legitimacy, a performance has to be a successful one; successful in the sense that everyone must be able to witness the effectiveness of a policy that is based on scientific and technological knowledge. However, the notion of performance is not without ambiguity: the *possibility of failure* is a key part of any public performance in a liberal-democratic setting. By contrast, Ezrahi argues, monarchs or totalitarian leaders retain tight control over the performance itself, and over the

representations of a performance that are publicly conveyed, e.g. in the media. In other words, the liberal democratic public, according to Ezrahi, is assigned a more flexible model of agency; it is trusted with being able to handle a potentially unsuccessful performance.[4]

Ezrahi uses Lysenkoism as an example to illustrate the difference between liberal-democratic and authoritarian polities. Although Trofim Lysenko's method to increase crop yield was an obvious failure, it took decades before it was acknowledged as such, because, according to Ezrahi, there had been no independent (public) control. All that was permissible was acting according to the celebratory model, i.e., affirm and acclaim the official version of "what was to be seen." But in the end, "the truth will out," i.e., performance decided the issue:

> In a state like the Soviet Union it took much longer for an instrumentally functional approach to prove its credentials and defeat a competing alternative [Lysenkoism] through a compelling superior performance. … [Communist cultural-institutional systems] lacked the power to decentralize the accountability of actors and subject them and their actions to public tests of legitimation. (Ezrahi 1990, 234)

I respectfully disagree with Ezrahi on this account. One problem with this version is that Lysenkoism in fact provoked a series of public (and highly publicized) meetings, discussions, and "spectacles"—some of them quite literally performances (they even included rehearsals, cf. Krementsov 1997). I think Ezrahi is right that the Soviet state maintained tight control over the representations of the outcomes of such public meetings, the performances themselves were far more complex than plain celebrations. They did involve an element of public legitimation, and the most thorough preparation did not prevent unexpected events that were clearly identifiable as "failures."

In my opinion, it is not the possibility of failure, or the potential of an unsuccessful performance that can ultimately distinguish these two models. Both liberal democracies and monarchies or totalitarian states tend to arrange public performances in such a way as to avoid failure; good "stage management" is vital in both contexts (Hilgartner 2000). Even if this goal is not always made explicit, it becomes evident in cases where a public performance does

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[4] "[B]oth variants of modern totalitarianism have relied on a concept of certain objective reality to foreclose all doubts and criticisms on the part of the citizens. Both … have employed the evocative aesthetics of mass state spectacles to weaken their citizens' powers to distance themselves critically from the government. Their purpose in doing so is to arouse the loyalty of their citizens and protect the government from the kind of

fail, e.g. the Challenger explosion. On the other hand, any state's means to control the success of public performances are limited. Ezrahi argues that while the United States broadcast pioneering science and technology live, the Soviet Union chose to show funerals on television—a presumably "safe bet." However, there were public performances in the Soviet Union that spectacularly failed (Brezhnev's funeral was a case in point, cf. Hobsbawm 1994).

One could argue that totalitarian regimes had developed sophisticated ritualized forms of attestive visual culture. Why would a dictator like Stalin, and to a lesser degree his successors, why would the king in Andersen's fairy tale "The Emperor's New Clothes" bother with public spectacles at all, if they did not expect some kind of legitimation from such an exercise? I think the answer is connected to what is considered the "nature" or essence of science, and to developments within science that tend to emphasize irreducible uncertainty. Ezrahi finds this most prominent in physics (cf. Jasanoff 1992), but the Soviet campaigns in the wake of the Lysenko-affair demonstrated that this "problem" was by no means limited to this discipline (cf. Krementsov 1997). If the Soviet state and its leaders wanted to draw on science as a powerful and *publicly accessible* and *universally valid* rhetorical resource to legitimize their power, they needed these (semi-)public rituals.

Furthermore, the problem with the criteria of "apparent success" or "successful performance" as legitimizing criteria is that what counts as "successful" is an achievement in the first place and needs our attention. Rather than just assuming certain criteria as given, "success" and "performance" seem to be achievements that require work to be established in the first place.[5]

Back to the roles assigned to the public. What happens when we look at individual actors as *a population?* The image of "the public" often carries an implicit distrust in the creative abilities of the people subsumed under this notion. Even in liberal democracies with

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citizen's detached engagement which continually subjects democratic leaders to merciless scrutiny." (Ezrahi 1990, 91)

[5] In the case of nuclear reactor design choices in the Soviet Union, it is fairly obvious that one technical design project was not chosen over another because of its superior performance. There was very little experience with any type of reactor to build on when these choices were made. Rather than smooth operation, technical safety, or even economical efficiency, among the factors determining the choice of reactor designs for serial production and implementation were the successful operation of small-scale prototypes and the possibility to scale up these reactor types, the nascent industry's capacities to produce construction components, and the availability of nuclear materials necessary for the operation of civilian reactors. It was a truly amazing *achievement* to turn these limits and constraints into a success story that emphasized functionality, safety, and national distinction.

a strong commitment to public participation, at times there are doubts in the public's capacity to become "enlightened," and to perform its role as attestive spectators adequately. A possible consequence of such a lack of confidence in the public's abilities is frustration, and eventually cynicism. Ironically, the image of the public that guides policy makers is often the kind of public that would have been *created* had the implementation of these policies proceeded successfully.[6] In other words, the public is seen as potentially being persuaded *to want what it needed* (cf. Ezrahi 1990, 224).[7]

"The Public" in Soviet Periodicals

As mentioned at the outset of this paper, I investigate the popular-scientific media discourse on nuclear power in the Soviet Union. The articles I analyze are consciously prepared with specific audiences in mind. They are written and edited with a clear idea of how their readers are supposed to understand them. An "attentive public" in a western sense, understood as an active, involved democratic public, possibly in the form of public pressure groups, emerged in the Soviet Union only in the second half of the 1980s. But I think it is a trap to think that we should trace just this western type of public. Even in a totalitarian, top-down ruled state, there were those governed, those affected by state policies, those "molded" into "ideal Soviet citizens" (or punished for not becoming them). The "imagined public" has always been there.

In the decades preceding the Chernobyl disaster, risk in terms of NPP operation was absent from the discussion. The lack of containment was seen as an advantage facilitating a greater frequency of testing parts, basically unlimited potential to expand the size of the reactor, avoidance of manufacturing the technically sophisticated containment structure (Dollezhal & Krasin 1959). This is not to say that Soviet scientists were unaware of the risks of radiation involved; quite on the contrary. However, they thought that only diligent testing could help them understand the new phenomena involved and thus increase radiation safety (Aleksandrov 1962, 118). Safety was something that had to be considered, but something

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[6] See also Scott 1998, 349.

[7] It is a curious irony that "the public," key point of each one of Ezrahi's models, remains strangely amorphous. In contrast to earlier studies of the role of "public" witnessing for the authority of science (Shapin and Schaffer 1985), Ezrahi does not address the question of who constitutes "the public," who actually gets to testify, to witness, to attest. A closer look at these actors might have provided another criterion to distinguish "celebrators" from "attestors;" or (as I suspect) it might have complicated his story beyond all limits by introducing new differences of role-assigning, -fulfilling, -creating, and -transgressing.

under control; something that could be ensured, even guaranteed. In this model, "the public" was seen as a mere recipient of benefits, and it was expected to feel grateful (Brooks terms this "gift economy", cf. Brooks 2000).

The risk of *economic* failure was prominent from early on, and retained its power even after Chernobyl (Lukonin 1987). Until the world's first commercial reactor at Obninsk went critical in 1954, there were serious doubts about whether nuclear energy was going to "make it" and to become a branch of the national economy; whether it could be used for non-military purposes in any efficient way (Dollezhal' & Karsin 1959). As early as 1959, radiation safety was measured up against economical profitability. The standard in this model, therefore, was not public acceptance: the public was not even assigned the role of celebrators.

After Chernobyl and the collapse of the Soviet Union, the representation of risks and dangers changed dramatically. It was only then that the media started to discuss risk as a concept meaning more than "safety", i.e. involving certain uncertainties. Starting with the accident, risk issues took on more space. "The human factor" entered the discussion as a crucial element of uncertainty, which also prompted authors to suggest different ways of excluding and/or controlling this variable.[8] Despite this new interest in the human actors in technological systems, the public was still not considered an actor, let alone actors.

Back in 1957, I found a publication whose authors consciously deliberated the potentially problematic effect of stressing only the positive sides of developing nuclear energy.[9] During the ensuing decades, however, the public—be it the readers, the potentially affected population, or nuclear power plant operators—more or less disappeared. The public returned to the pages of the press only after Chernobyl.

In June 1986, a short text entitled "A bitter lesson" (Anonymus 1986) addressed even those readers who normally do not read the scholarly journal *Nuclear Energy (Atomnaia Energiia)*, but turned to the journal after the Chernobyl accident. The article's tone is reassuring, announcing a governmental commission in charge of the events. "The Soviet people" are equaled with the article's readers, and although they are portrayed as ardent supporters of Gorbachev's new politics, the solution suggested by this text is the regaining of centralized ordering power: nuclear energy is presented as "peaceful" only inasmuch as it is

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[8] E.g. by designing simulators for operator training, by providing better training and by carrying out regular educational checks and updates for nuclear power plant operators; by designing redundant technical systems that prevent human mistakes etc.

under technical and social control. Like the official information provided to the IAEA (International Atomic Energy Agency) in August 1986, the text solicited readers to adopt the experts' perspective, to believe their assessment—namely, blaming the operators for the accident.

Gradually, however, this patronizing tone made room for more sophisticated discussions about "the public." This, undoubtedly, was connected to the massive upraise of "social groups," which helped the idea of "the public" conquer a status as an actor in a debate. These groups formed in the wake of the Chernobyl accident, taking advantage of Gorbachev's policies of glasnost' and the abolishment of official censorship. For the brief period of a few years, they effectively managed to halt any activity in the sphere of nuclear power engineering: the construction of new reactor blocs, the scheduled start of recently completed ones, etc. These groups managed to distinguish themselves as serious challengers of nuclear energy officials and their plans for this technology's future. Although the journals I study rarely provided members of these public groups a voice as authors, the public increasingly appeared as actors who had to be taken into account seriously.[10]

In an article from 1990, a split runs through the imagined audience: the article entitled "On the legal and economic status of the public and nuclear energy objects" (Ignatenko, Golovanov & Polushkin 1990) clearly distinguishes between the text's readers on the one hand, and the general public on the other. The readers are explicitly addressed as politicians, scientists, engineers, and other experts. They are encouraged to participate in popularizing efforts, but not just by informing or educating the public, but by regaining their trust, and changing ("balancing") their negative attitude toward atomic energy. The article introduces ideas of insurance standards and risk compensation in the form of social benefits. The authors even call for participatory procedures involving "public expertise," and for granting the public permanent access to information on a nuclear plant's operation.

Conclusion

The concepts of risk and the public are intricately tied together. Soviet scientists and science journalists had managed quite well to keep dissent between science and politics away

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[9] "Such one-sided claims give the Soviet reader the wrong idea and do not help the formation of a realistic conception of the economical and engineering problems that emerge over the development of nuclear energy." (Koriakin & Bat' 1957, 489)

[10] Babcock 1997.

from (invisible to) the public—hardly any doubt was ever cast on experts and the expert system. It was only the Chernobyl accident and the contemporaneous opening of society under Gorbachev that shattered many taken for granted assumptions. Suddenly, conflicting expert opinions were discussed in the open, and the experienced reality of chaos, sickness, and evacuation ceased to correspond to the positive image of science still promoted by most scientists. Public interest groups managed to form powerful counter voices to the scientific discourse. The journals—although rarely involving actual public actors—had to deal with these groups' success. How public would they become? What did they consider "public enough?"

I can't tell from my data whether trust in experts had declined before the Chernobyl disaster, but I can safely say that the media discourse of the post-Chernobyl period presents a negative attitude among the public towards nuclear energy and nuclear experts as new. Whether this was true due to changes in public opinion, or merely to loosened censorship practices is hard to say.[11] After Chernobyl, the scholarly and popular-scientific periodicals in my sample presented the risk of another nuclear accident as smaller than ever. The accident was described as "a childhood disease," or a "lesson" that had to be learned. In the end, it had made nuclear power plants safer than ever before, because now they were being checked more regularly, much more attention was paid to their safety systems, and in particular to the human elements in the chain of operation.

The mantra-like formulas about the ultimate victory over the Chernobyl accident, proved to be persuasive. While providing a fairly open-minded platform for discussing competing points of view, these journals also provided the discursive continuity that post-Soviet nuclear energy programs rely upon until this very day. They kept the expert discourse stable, and maintained clear boundaries between science and non-science, thus contributing to the normalization and stabilization of the official discourse on nuclear energy in a fundamentally changing political context. But Chernobyl also provided the realization that "the public" could be more than just passive recipients, and more than acclaiming spectators of state policies. The *actual* public (environmental groups) challenged the models of agency that were implicit in the media discourse (i.e., in the official discourse), and established "the public" as an actor to be considered in the first place, whose actions and reactions could not

[11] Brian Wynne (1996) has argued that the assumption of the public *losing* trust in experts/science is a modernist assumption to be challenged: it takes for granted that in the past, a silent public was the equivalent of an approving public.

always be controlled or predicted. Thus, the nuclear establishment's models of agency had to be adapted to a new constellation of actors—performers and spectators.

Outlook & Questions

What is the use of an historical case study like this for thinking about public participation models today? I want to end by posing three questions:

When we are talking about various forms of public participation, what are our models of agency? Are they different from a deficit model?

What if "participatory technology assessment" is just a "controlled conflict," a deliberate stage on the way to implementing (expert) policies?

Do our ideas about consensus conferences, public participation etc. imply essentially different models of agency, or are they just new versions of the same play: experts know, inform and tell, and the public learns and accepts, affirms—the only difference being that now they got some time to disagree?[12]

[12] Take the example of the U.S. nuclear industry today: the regulatory process attempts to limit public participation to certain stages, "opening" the debate just as much as absolutely necessary, making it just "public enough" to achieve legitimacy for pursuing the industry's goals.

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