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Where are the Missing Masses? The Quasi-Publics and Non-Publics of Technoscience

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Abstract The paper offers a political-philosophical analysis of the state and publics in the age of technoscience to propose three distinct categories of publics: *scientific-citizen publics* constituted by civil society, *quasi-publics* that initiate another kind of engagement through the activation of 'political society,' and *non-publics* cast outside these spheres of engagement. This re-categorization is possible when the central role of the state in its citizens' engagement with technoscience is put upfront and the non-Western empirical contexts are taken seriously by Science, Technology and Policy (STP) studies. The paper argues that in most of the world the state maintains a political contract with technoscience to form a functional coupling as the *state-technoscience duo*, which shapes public engagement with science through different functional modalities of government. Civil society is the sphere of legitimate engagement and participation in technoscientific issues for the scientific-citizen publics. The quasi-publics choose to be in the shady zone of political society establishing a *paralegal* relationship with the state-technoscience duo, while the non-publics come into being due to conditions of *extra-legality* created by the duo. The non-publics are implicated in the political community paradoxically as an excluded category who cannot be included in deliberation because of their status as being expelled from political community in a 'state of exception.' The paper proposes that the scientific-citizen publics are mobilized *in contrast to* the quasi-publics and *with reference to* the non-publics, helping STP studies to identify the 'missing masses' of technoscience.

The title of the paper draws inspiration from Latour (1992).

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Science and Technology Policy (STP) studies must include the role of publics, and go further than the present theoretical investigations on, and activities of, public/citizen participation in technoscience and the discussion of public engagement with science. There are more publics than the ones envisaged in these participatory activities—there are quasi-publics and non-publics, lurking and often unseen—and there is more than academic science to be engaged with. Actually, as I will show, the domain of Public Engagement with Science (PES) studies has now reached a stage where the role of the state is becoming visible in relation to how different kinds of publics engage with technoscience. In this paper, PES will be the stepping stone to offer a more political-philosophical analysis of the state and publics in the age of technoscience. Case-studies from India allow the identification of quasi-publics and non-publics, but they are present in Western countries as well, even if there the focus on civil society publics keeps these other publics almost invisible.

As a field of studies, PES investigates how laypeople engage with science and technology and the contributory nature of this process to the democratization of science and society. The contextualist (constructivist) framework that developed in the 1990s transformed the field by situating laypeople as heterogeneous 'publics' with social and political agency, unlike the earlier 'deficit model' that saw the public as a passive homogenous category. The next step is to re-imagine the publics as a political category, or better, to consider a number of such categories: *scientific-citizen publics* constituted by civil society, *quasi-publics* that initiate another kind of engagement through the 'political society,' and *non-publics* cast outside these spheres of engagement. This new imagining is possible when the central role of the state in its citizens' engagement with technoscience is put upfront.

The deficit model portrayed the public as ignorant and needing to be educated, and granted the epistemic authority to do so to the scientific community. The Bodmer Report on *The Public Understanding of Science* (Bodmer 1985) employs the deficit model, and underscored the duty of the scientists to communicate with these public (Miller 2001), while subscribing to the liberal democratic understanding of citizenship as mobilized (individual) citizens. This rendering of the public was challenged by STS scholars in their endeavour to locate the 'actually existing sites' of PES and trace how heterogeneous publics are actually constituted in various ways through a range of discourses and institutional arrangements and cultural processes, and how those publics encompassed knowledge and expertise that could compete with the offerings of formal technoscience expertise. This perspective informed the contextualist model,[1] which recast the publics as a *sociological* category consisting of social groups "attempting to express and defend [their] social identity" as in the classic case study of the hill sheep-farmers (Wynne 1996: 39). This shift in the field emphasized a distinction between the rather abstract existence of a wider public and the specific publics that have been constituted in

[1] See Wynne (1994, 1996) for detailed discussion of the model.

micro-social contexts. The public engagement and participation exercises are sites of construction of publics and forms of citizenship (Felt and Fochler 2010). The contextualist model thus initiated the possibilities for exploring the category of publics as a *political* category, especially in the wake of the 'deliberative turn' in the democratic theory within political science.[2] Micro-sociological studies of PES offer a rich empirical source for such explorations.

The major questions being mooted at this juncture were about the normative conditions and characteristics of the political deliberation on technoscience, the discursive loci of democratic deliberation and the very nature of the category of publics. It was argued that science in the public domain has to be taken seriously to facilitate democratization of technoscience and that the need for such democratization was both procedural (as a matter of democratic equity) and instrumental (as a matter of effective political processes), and scholars generally began to situate the deliberative turn in conjunction with the emergence of post-industrialized societies in the West, and the complex socio-technical dilemmas that they face. The two major theorizations in this regard were the theory of risk society proposed by Beck (1992) and the Mode II knowledge production thesis (Gibbons et al. 1994). Both theories presented a transformation in the relationship science has with other social institutions. Beck registered this transformation as one of 'reflexive modernization of industrial society,' wherein "[methodical] scepticism is extended to the foundations and hazards of scientific work and science is thus both *generalized* and *demystified*" (Beck 1992: 14).[3] The emerging risk society enhanced the publics' participation in regulating their social worlds which was earlier handled by experts (Hagendijk 2004). The second perspective indicated emergence of a new mode of knowledge production, a more socially robust and application-oriented transdisciplinary (techno)science (Nowotny et al. 2001). As a result of this transformation new social spaces for deliberation were opened up, consisting of "a highly articulate, well-educated population, the product of an enlightened educational system" who combine the roles of citizen and consumer (ibid: 204). Both the theorizations highlighted that the emergence of publics is an integral and inescapable part of the changing configuration of technoscience that leads to a 'loss of distance' between science and diverse domains of its social environment (Weingart 1998; 2002).

This loss of distance between technoscience and other social and political domains, and the emerging contact zones where different kinds of subjectivities, expertises, epistemic traditions and cognitive processes were meeting demanded fresh investigations into the characteristics and dynamics of this process. However, this fresh orientation towards political theory posed two major *normative* questions. The first was about the purpose of public deliberation. Should the deliberation lead to a consensus among the stakeholders on the debated issues or should it remain open-ended? Is it possible at all to attain a consensual closure if the debate is open to a wide range of actors and stakeholders who represent different, even incommensurable social identities and epistemological standpoints? The second issue

[2] See Dryzek (2000) for a nuanced exposition of the deliberative turn in democratic theory.

[3] Italics as in the original.

(and related to the first) is the question of expertise: all the participants in the deliberation are currently understood as having specific sets of expertise. However, should all these expertises be included and/or given the same leverage? If not, what should be the criteria for inclusion and exclusion?[4]

There are two major ways of understanding the category of publics after the deliberative turn. First is the attempt to address the issue of science and citizenship.[5] The attempt is then to look at science from the citizen's side instead of from the purview of scientific establishment (Irwin 1995: xi). The original conceptualization of the category of scientific citizenship was linked to thinking on scientific governance aiming at the effective, participatory management and resolution of the risk controversies through various deliberative forums and techniques such as citizen juries, consensus conferences, citizen panels and science shops. Here the 'reflective' citizens of the liberal democratic polity are understood as engaging with a reflexive technoscience that is willing to accommodate citizen participation in decision making processes. Most of these exercises anticipate consensus or at least the tentative closure of the issue under deliberation. However, the major criticism about such deliberative mechanisms is that they are largely devised as "structured interactions between citizens and experts" choking the communication process by default (Lövbrand et al. 2011: 482). This happens because of the exclusion of a large spectrum of opinions and expertises due to the impossibility that the selected members could represent all of them. And therefore, a wider public deliberation is required for the democratization of technoscience.[6] Under this second stream in the post-deliberative democratic understanding of the category, the 'scientific-citizen publics' thus appear as a more inclusive category that captures the internally diverse, multicultural and context specific nature of the deliberations.[7] This transition is quite evident in the attempt to understand citizenship in more discursive terms as "practiced engagement through emergent social solidarities" (Leach and Scoones 2005: 29), emphasizing the constructed nature of scientific citizenship that makes it less important to be demarcated from the publics (of science) and the terms—scientific citizens and publics—are now used almost interchangeably.[8]

This brief discussion reveals the two strong limitations of the field that demands further explorations. Firstly, the category of publics is under-theorized, in part because it fails to take the relationship between technoscience, state and citizenship into account. Secondly, there is a bias towards the context of the post-industrial societies in the West. Thus, on the one hand, the non-Western empirical contexts are under-examined, while, on the other hand, theoretical frameworks, tools and categories moulded in the crucible of Western experiences are used to make sense of

[4] See Collins and Evans (2002), Rip (2003), Jasanoff (2003), Wynne (2003), Durant (2011).

[5] According to Irwin (1995: xi), 'citizen science' "implies a form of science developed and enacted by citizens themselves." See also Irwin (2001), Leach and Scoones (2005).

[6] See Jasanoff (2003) for a detailed substantiation of this position in response to Collins and Evans (2002).

[7] The category draws theoretical insights from the Habermasian idea of public sphere and communicative rationality, but also recently from the politics of difference, a trend in political theory that goes against the grain of the former. See Durant (2011).

[8] Therefore, the term *scientific-citizen publics* will be used hereafter to denote the civil society publics.

the non-Western contexts. For example, as we have seen earlier, the risk society and new mode of knowledge production theses, which provide the theoretical backdrop for the current debates, have emerged from Western industrial contexts, contexts that may limit how successfully the field can engage with the Asian, African and Latin American backgrounds with their own unique historical and social dynamics. As Wynne (2005: 72) suggests, this theoretical fixation leads to the exclusion of the 'rest,' as the assumed universal validity of Western-developed frameworks imposes Western models of scientific citizenship on non-Western contexts, which in turn demands an "imposed saliency or irrelevance of local contextual social conditions." However, the issue is more complex still, due to the peculiar ways these Western categories were assimilated in postcolonial contexts like India. The Indian political theorist Sudipta Kaviraj points out the 'paradox' involved in applying many of these concepts and categories in non-Western contexts:

> ... Third World politics is based on an unavoidable paradox. The language of modern politics is astonishingly and misleadingly universal [...]. In studying Third World politics, therefore, we face an additional problem of linguistic reference—a serious mismatch between the language which describes this world, and the objects which inhabit it. To get a grip on this world, in which not single isolated ideas but entire languages seem to be composed of systematically misleading expressions, we must start from an understanding of what ... [these concepts and categories] means (*sic*) in the Western tradition, and then move on to try to capture what ... [they] might seek to express in the language that describes and evaluates political possibilities in that other world (Kaviraj 2001: 289).

Therefore, the task is twofold. To produce a more politically robust knowledge regarding public involvement, we have to further reflect on the categories and concepts we are dealing with, taking into cognizance the diversity in *most of the world*.[9] A re-conceptualization of the category of publics in connection with the state, citizenship and civil society is in order. Although I shall be discussing cases mainly from India, the endeavour to take into cognizance 'most of the world' may also provide insights into the contexts in Europe and the US, as 'most of the world' includes 'the rest within the west' as well.

Technoscience, State and Citizenship

The post-World War era was a moment where science entered into a special relationship with the nation-state. The idea of progress became part of the ideology of the state and S&T turned out to be the epistemological engine of national development (Raina 1997).[10] The experience of the World Wars and the transformation of science into the military-industrial complex contributed to the elevation of science as part of the official rhetoric of the nation-state all over the world. This was further augmented by the Cold War and the emergence of

[9] An idiom used by Chatterjee (2004).

[10] In the US, however, the history of this relationship can be traced back to the nineteenth century.

postcolonial nation-states in the third world, states that aspired to self reliance and national development, while subscribing to the Western paradigm of S&T based socio-economic development. In India, for example, the foundation of the new society was entrenched in the Bernalist-Nehruvian ideology of science (ibid: 11), which was a highly 'customized' version of the kind of contract developed between science and the state in the West.

Although the postcolonial state's engagement with science went through several ups and downs, the position of science as integral to the state continued even after the neoliberal restructuring of the state in the 1990s. The state protects technoscience from political interventions and helps safeguard its status as the epistemic engine of progress. This role has engendered the emergence of a 'technoscientific complex' in relation to the developmentalist rhetoric of the state, offering high-tech projects and products by integrating national science increasingly into the global technoscientific system.[11] Simultaneously, these relationships ensure (as in the previous phase) that "scientific estate [has] a direct, privileged access to the state," thus introducing "another kind of politics into science" (Nandy 1988: 5). In return, the technoscientific complex legitimizes the state by helping it sustain the developmentalist discourse. This close coupling between the state and technoscientific complex seems to be the case in most of the world, even in an era of so-called post-industrialization and reflexive modernization. Yet this new mode of knowledge production popular in the West has to be cautiously re-examined in the non-Western contexts like India, because this reconfiguration of technoscience may have different trajectories outside the West.[12] The continuance of the tacit political contract between the state and technoscience points to this. The contract places the latter outside the realm of politics and thereby protected from social audit, even in the context of intensified public deliberation on technoscientific complex. The symbiosis between state and technoscientific complex precipitated through the political contract prompts their functional existence as the *state-technoscience duo*. Any analysis of PES therefore cannot avoid taking into account the vital role of the duo in the process.

The argument that the state-technoscience duo is a key determinant of PES in most of the world is substantiated by recent cases from India. The post-Fukushima public controversy over the commissioning of the nuclear reactor in Kudankulam in Tamil Nadu is one among them. The local people's opposition to the decision of the Nuclear Power Corporation of India Ltd. (NPCIL) to build two Russian-made nuclear reactors in the region has a history going back to 1988, but attracted wider public attention only after the Fukushima disaster in Japan. Even after a lengthy deliberation and consultation involving citizens, experts and government officials that raised concerns about the project, the government is going ahead with the decision to commission the reactor. This outcome contrasts with the Bt Brinjal

[11] India has been rapidly doing away with its Nehruvian emphasis on self-reliance in science and technology since the neoliberal refashioning of its economy in the 1990s, initiating collaborative research projects where diverse stakeholders are involved and rapid technology transfer from developed countries. This has also ensured direct participation of multinational corporations in high-tech projects in various sectors of the economy.

[12] A detailed analysis of this problem is beyond the scope of the paper.

controversy wherein public deliberations could effectively influence the decision making process against expert advice. The Genetic Engineering Approval Committee (GEAC), a statutory body of experts, granted clearance to the environmental release of genetically modified brinjal (eggplant; *Solanum melongena*) called Bt Brinjal, developed by the Maharashtra Hybrid Seeds Co. Ltd (Mahyco),[13] that contains a foreign gene inserted from the soil bacterium *Bacillus thuringiensis*. The inserted gene was supposed to give the plant pest resistance against lepidopteron insects. This raised a public outcry regarding the health and environmental impacts of the first ever release of a genetically modified food crop in the country.[14] Following strong opposition from provincial governments and civil society organizations, the Ministry of Environment and Forests organized public consultations in seven major cities of the country, and used its official website to invite public response. This process culminated in the Ministry declaring a moratorium on the recommendations of the GEAC, and proposing the establishment of a National Biotechnology Regulatory Authority to look after similar issues in the future.[15] Although the final decision on the environmental release of GMOs is yet to arrive, the public consultation acknowledged the scientific-citizen publics as authentic players in the decision making process.[16]

The contrast between the nuclear power and transgenic crop examples shows that the state-technoscience duo is open to public participation in the regulation of technoscientific issues in some cases, but refuses to be open in other cases. The paradox is that, on the one hand, there is a growing distrust of the technoscientific complex that instigates greater public criticism and participation in the decision making process. On the other hand, the technoscientific complex continues to be outside the domain of public intervention unlike other domains of socio-political life.

Thus, scientific-citizen publics come into being in relation with the duo of technoscience and the state, as part of *civil society*, the domain of institutions placed between the private individuals and the sovereign state, which is 'a zone of legitimate political discourse' for the citizens.[17] But for this paper, the key point is that civil society is a sphere that does not represent the entire popular politics (Chatterjee 2004, 2011). The civil society is an elite domain of legitimate participation in politics to which many have no access because they are not endowed with rights of and capacities to express full citizenship. Therefore, their engagement with the state-technoscience duo is different from those of the rights-bearing citizens. This helps us demarcate the scientific-citizen publics of technoscience from 'quasi-publics' constituted by the *political society*, a different sphere of politics that exists simultaneously with the elite civil society (ibid).[18]

[13] Mahyco is an Indian subsidiary of Monsanto.

[14] This opposition is in sharp contrast to the acceptance of the environmental release of Bt Cotton by Indian farmers a decade ago. Bt Cotton is now widely cultivated in India.

[15] For details, see *Frontline*, 27 February–12 March 2010: 4–24.

[16] For a similar case wherein the media played a crucial role, see Varughese (2011).

[17] See Chatterjee (2004: 32).

[18] It is actually the deficit model that successfully identified the existence of quasi-publics, although negatively as unruly publics or passive masses.

The quasi-publics are not the same as 'counterpublics' in civil society that push their agenda into the mainstream public sphere through subaltern social movements and similar platforms (Fraser 1995).[19] In sharp contrast to the counterpublics, the quasi-publics are not formed in terms of nature of their participation in technoscientific issues and knowledge production. Instead, the quasi-publics are generated by 'political society,' a separate sphere of *paralegal* negotiations and pastoral functions of governmentality (Chatterjee 2004).

Political Society and the Quasi-Publics of Technoscience

The postcolonial state's claim of taking care of the well being of the population through technologies of governmentality creates "political society" by "connecting populations to governmental agencies pursuing multiple policies of security and welfare" (Chatterjee 2004: 37).

> Most of the inhabitants of [postcolonial countries like] India are only tenuously, and even ambiguously and contextually, rights-bearing citizens in the sense imagined by the constitution. They are not, therefore, proper members of civil society and are not regarded as such by the institutions of the state. But it is not as though they are outside the reach of the state or even excluded from the domain of politics. As populations within the territorial jurisdiction of the state, they have to be both looked after and controlled by various governmental agencies. These activities bring these populations into a certain *political* relationship with the state. But this relationship does not always conform to what is envisaged in the constitutional depiction of the relation between the state and members of civil society (ibid: 38).[20]

The members of the political society are not conferred full citizenship rights, because their livelihoods or habitation may often infringe on the legal boundaries set by the state. They include illegal migrant labourers, street vendors, sex workers, inhabitants of slums and railway lands and rag pickers who cannot claim full legality and juridical protection of their existence albeit they make their own associations and movements to negotiate with the state. The state agencies deal with these associations "not as bodies of citizens but as convenient instruments" to govern them (ibid: 40). The state cannot treat their claims as justifiable rights, because such a move may further infringe public property and civic laws (ibid). The state thus has a dilemma in managing the members of the political society and hence goes for measures to take care of some of their needs and reduce unruliness (the pastoral function of governmentality)[21] to tentatively defuse tensions, but a permanent legal settlement of the key issues involved is constantly deferred. This contrasts with the negotiations the state has with its citizens in the public spheres.

[19] Therefore, the three categories of publics—the lay opinion public, counterpublics, and official publics—proposed by David J. Hess are all civil society categories (see Hess 2011).

[20] Emphasis as in the original.

[21] See Foucault (1981) for a detailed discussion on pastoral power.

The existence of a political society as a quasi-legitimate sphere of politics that concerns populations outside the elite and exclusive sphere of civil society allows recognition of another kind of publics existing beyond the scientific citizenry of the civil society. Many of the deliberations on technoscientific issues are actually enacted in the political society, where the quasi-publics encounter the state-technoscience duo in concrete situations. The quasi-publics of technoscience are constituted by a wider population than originally imagined by Partha Chatterjee, including village communities and tribals whose livelihood is threatened by the high-tech projects. The villagers' resistance to the nuclear reactor projects in Kudankulam, Tamil Nadu and Jaitapur, Maharashtra as well as the struggle of the tribals of Niyamgiri hills in Orissa against bauxite mining are some recent examples from India that mark the activation of an alternative mode of negotiation and confrontation between the state-technoscience duo and the quasi-publics. The state and the technoscientific complex never consider them as genuine citizens of technoscience, but as representing the unruly population. The organizations formed by them negotiate with governmental agencies although their claims and demands never fully get acknowledged as part of the rights discourse. Many of the struggles in political society have been continuing without much attention from the scientific-citizen publics, and the issue at hand triggers wider deliberations only when it is successfully transferred from the political society to the civil society through a complex and dense process in which several agents including media and courts are involved. As I will show, this transmission links, but may also dilute or substitute, the concerns of the quasi-publics with those of the full-fledged scientific-citizen publics, initiating 'legitimate' public deliberation, while the state continues with its tentative negotiations with the political society on a completely different plane.

The ongoing opposition to the nuclear power project in Kudankulam from the local villagers demonstrates the activation of the political society. The Indian government signed a contract with the USSR government in 1988 to start the project, and in the same year the peasants and fisher folk of the region started their agitation against the project because they realized that the water needed for the nuclear plants would be drawn from an irrigation dam in the region on which they were dependent. The fishing community of the region joined the peasants, understanding that the waste water released from the plants to the Bay of Bengal would affect their livelihood. The demonstrations of the 'unruly' quasi-publics led to fierce confrontations with the police.[22]

The project was stalled following the collapse of the USSR. However, in 1997, India signed a new contract with Russia to install two 1,000 mega watt reactors in Kudankulam. This time, the government agencies were cautious to avoid direct confrontation with the quasi-publics and declared that processed sea water will be used in the reactors instead of irrigation and drinking water from the dam. The required land for the reactor was acquired from the villagers by assuring them employment in the project. Because of these effective settlements, the political society was not re-activated.

[22] Police fired at the protest march organized by the local people under the National Fish Workers' Union in May 1989, killing one person. *The Hindu*, Sunday, November 13, 2011, p. 6.

In 2001, the People's Movement against Nuclear Energy (PMANE) was established as a wider platform to raise public concern about the risk of nuclear energy. This was a strategic move initiated by the quasi-publics to bring their concerns to the fore by wooing scientific-citizen publics. It largely failed to catch the attention of wider publics in the initial phase, but started gaining notice after the Fukushima nuclear disaster. The deliberations in the public spheres of civil society largely focused on the risk and safety issues, the viability of nuclear energy and India's role in nuclear diplomacy. Protest demonstrations were organized nation-wide against the project by various civil society groups, and wider alliances were formed among these groups. Consequently, PMANE successfully emerged as the umbrella organization that bridged the concerns of quasi-publics with scientific-citizen publics. Nuclear experts and policymakers defended the project and finally Dr APJ Abdul Kalam, the former President of India and a reputable technocrat, made a visit to the construction site and endorsed the feasibility of the project, addressing the civil society.[23] He avoided meeting the local people but proposed a 250-crore development plan for the region, offering them employment and better infrastructure.[24]

The response of Dr. Kalam, as representative of the state-technoscience duo, suggests the existence of a political society quite distinct from the civil society. While he considered it important to engage in a dialogue with the scientific-citizen publics, he never found it necessary to meet thousands of villagers who were protesting near the project site. While actively participating in the civil society debate on the issue, Dr. Kalam just proposed welfare measures to placate the quasi-publics, a strategy the state-technoscience duo has been adopting from the beginning of the controversy. This governmental strategy further indicates the existence of the political society parallel to the civil society, and with different kinds of interactions, but often overshadowed by the civil society. My emphasis here is that to understand the complex dynamics of technoscience and the state, one must distinguish between these two spheres of engagement. The quasi-publics' engagement cannot be captured within the frame of risk discourse, because what is perceived as 'risk' is fundamentally linked to, but not equal to, the question of livelihood for them. Therefore, many technoscientific issues which raise serious alarm in the civil society may be ignored or differently utilized as a livelihood resource by the quasi-publics based on how these issues and risks may support their daily struggle for existence. This is why, for instance, the environmental pollution and health hazards created by plastic waste, which is a grave concern for the scientific-citizen publics, often do not attract opposition from political society: plastic waste—and garbage in general—is a life-affirming resource for the quasi-publics, helping to eke out a living by collecting and selling them. Thus, in many situations the political society withdraws, although the civil society continues to be active. Similarly, the loci of the quasi-publics' engagement with technoscience may

[23] In an essay published in a national English daily he strongly supported India's nuclear energy program by raising the issue of self-reliance, future energy security and the S&T oriented development. See Kalam and Singh (2011).

[24] *The Hindu*, Sunday, November 13, (2011), p. 6.

not be visible, if there is no activation of deliberation of the issue in the public spheres of civil society.

The quasi-publics are concerned mainly with their livelihood and survival issues and trespass the boundaries of legality, showing *the political* in PES. The quasi-publics engage with the state-technoscience duo through their potential unruliness, as a threat in the wings, forcing the duo to neutralise the menace posed by them. This is quite different from the public deliberation in the civil society which is understood by STP scholars in terms of risk and issues of regulation where the major concerns are matters of expertise and better governance of technoscience. The category of quasi-publics comes into view because of the concept of political society, which is often lacking in PES. The political society is the underground of civil society, and kept like that through the pastoral functions of governmentality, as we have seen. What I have argued is that, in addition, it is the state-technoscience duo that reinforces the separation by devising two different modes of functionality of engagement.

The Non-Publics of Technoscience and the State of Exception

There are more than the scientific-citizen publics and quasi-publics, who participate because they belong to the political community, whether as citizens (of civil society) who enjoy legal rights or in their paralegal existence in political society. The non-publics constitute a third category which comes into being due to conditions of *extra-legality* created by the state-technoscience duo, and which cannot be included in deliberation because of their status as being cast outside the political community. The non-publics are generated through a suspension of the law, when the state-technoscience duo declares a 'state of exception' (Agamben 1998). Just as the state-technoscience duo pursues its pastoral functions in placating quasi-publics, so does it ban non-publics in order to safeguard itself. The ban—the suspension of legality—means that the non-publics cannot participate in the public deliberations on technoscience, and are exposed to violence and death outside the bastion of political community. The condition of being thrown out of the political community strips people of all juridical-legal rights, and even the paralegal existence as in the case of quasi-publics is denied. As a consequence of their existence outside the political community in the state of exception, the non-publics become human guinea pigs (*Versuchspersonen:* VPs) and 'victims' of high-tech projects,[25] who are suspended between life and death, as *bare life*.[26] Comaroff (2007: 207), for example, identifies the creation of bare life in the context of HIV/AIDS infected people of most of the world, who are "scarcely human

[25] They are often represented as victims in STP studies literature, wrongly implying that they are devoid of agency.

[26] Agamben (1998: 159) points out that in the Nazi concentration camp the normal ethical principles and research procedures were suspended and the VPs "were persons sentenced to death or detained in a camp, the entry into which meant the definitive exclusion from the political community. Precisely because they were lacking almost all the rights and expectations that we customarily attribute to human existence, and yet were still biologically alive, they came to be situated in a limit zone between life and death, inside and outside, in which they were no longer anything but bare life."

being[s] condemned, in an age of humanitarian empathy, to callous exclusion, to death without meaning or sacrificial value; a being left untreated in an era of pharmacological salvation." The author reveals how a large number of infected people were abandoned, when those worthy of salvation had been retrieved from those condemned to death camps (ibid). This conspicuously indicates how some of the infected formed the non-publics and separated from the quasi-publics when HIV/AIDS discourse took shape in the West.

A recent case from Kerala, India, throws further light on the constitution of non-publics as a category of PES. The district of Kasaragod in Kerala is well-known for its government-owned cashew plantations. Since the late 1970s, the Plantation Corporation of Kerala had been spraying Endosulfan, a pesticide, in an area of 4,500 hectares with the help of helicopters, covering even the villages and hamlets nearby the cashew plantations, in an effort to increase cashew production. The pesticide spread through the water bodies all over the region, and the local community became aware of it only when they began to experience extreme health problems, including a steep increase in cancer, miscarriages and hormonal irregularities among women, high rate of infant mortality and physical deformation, autism, cerebral palsy, hydrocephalus, skin disorders and various unlabelled syndromes.[27] Following this, the political society became active and the villagers—the quasi-publics—took up the issue with concerned governmental authorities and a tentative ban on the spraying was achieved in 1998 from a lower division court by M.K. Leelakumari Amma, who was a resident of an affected village. The legal battle continued with demands from the tormenting villagers for a permanent ban on pesticide spraying, and civil society became activated when several scientists and health experts refuted the role of Endosulfan as the causative agent while others challenged that view (Rehman 2011). The public debate continued and the toxin was banned in Kerala in 2005, but the Government of India continued its stance in favor of the use of the pesticide, invoking the rhetoric of national development and scientific progress. When the committee constituted to review the Stockholm Convention on Persistent Pollutants (the POPS Convention of UNEP) discussed a global ban on Endosulfan in 2010, the official representatives of India argued against it, stating that the prohibition would adversely affect the agricultural production of the country. Despite India's continued opposition, however, the fifth POPS convention in April 2011 banned Endosulfan.[28] Following this action, in September 2011, the Supreme Court banned the pesticide in India, but granted permission to its Indian manufacturers to export a stock of 1,090 tons to other countries. Still the civil and political societies remain active on various aspects of the controversy as there is no respite from the ill-effects of the pesticide in the region even seven years after its use in the cashew plantations had ended.

'Beyond the activation of the civil and political societies as we have observed in the Kudankulam nuclear project controversy, the Endosulfan case reveals how the non-publics are a constant reference point in both spheres of engagement. The non-publics are produced by the state-technoscience duo. However, unlike the scientific-citizen publics and quasi-publics, they cannot participate in the

[27] See the special issue on Endosulfan, *Mathrubhumi Weekly*, December 26, 2010.

[28] See the special issue of *Mathrubhumi*, op cit.

deliberations because of their status of exception, as bare-life: they exist in a 'limit zone between life and death' (Agamben 1998: 159) as genetically mutilated, deformed bodies. They lie at the threshold of the political community subjected to the biopolitical function of governmentality[29] with their abnormal bodies exposed to biomedical observations and experiments.[30]

The non-publics are incapable of participating in the deliberations but constantly being referred to when the civil society and/or political society get activated. They have been referred to within the spheres of political community in various ways. Their disfigured bodies are re-presented and re-produced in public debates and legal proceedings. The scientific-citizen publics as well as quasi-publics use the non-publics[31] as a political resource to negotiate with the state-technoscience duo. Sometimes the very fear of an impending technoscientific catastrophe that has the potential to throw them out of the political community to be bare life exposed to violence and death steers the deliberation in both the spheres of engagement. For example, the debate on technoscientific risk in the civil society is generally informed by this fear. The quasi-publics in some contexts ignore this threat due to livelihood related reasons as in the case of rag pickers and labourers in scrap markets who often get exposed to harmful chemicals and radioactivity.[32] The risk deliberation could also be informed by ethical-political concerns about the non-publics who are excluded/cannot be included as partners in the deliberations.

The consideration of the category of non-publics challenges the confidence expressed by some scholars in the possibility of including all stakeholders as partners in deliberation at least in an ideal speech situation. While the addition of political society as a separate sphere complicates the dynamics of PES with reference to the state-technoscience duo, the category of non-publics exposes the dynamics behind the constitution of political community and the complex relations the two spheres of engagement have with the duo. The structural limitation of the inclusiveness of the political community as revealed by the non-publics poses fresh challenges before the deliberative turn in democratic theory as well as to the STP studies in its understanding of PES.

Conclusion

In this paper, I have attempted to add two more dimensions to the current discussion on PES by reconfiguring the category of publics while drawing attention to the close

[29] See Foucault (2008) for a detailed exposition.

[30] The mutant bodies of Endosulfan 'victims' raised much scientific curiosity. The disfigured bodies were observed by expert teams to gauge the effect of Endosulfan on biological systems and to classify the unknown syndromes. Medical teams also tried to 'repair' these bodies through experimental medical operations.

[31] The non-publics may also include altered life forms and future generations who are/will be affected by technoscientific decisions, but cannot be included as legitimate participants in the very process of decision making.

[32] See Remesh and Vinod (2010) for such a nuclear radiation accident in a scrap market in New Delhi, India.

alliance established by the state with the technoscientific complex in most of the world even in the context of a changing configuration of technoscience. Scientific-citizen publics are mobilized in the civil society *in contrast to* the quasi-publics and *with reference to* the non-publics. While the quasi-publics reside in the shady zone of political society, establishing a paralegal relationship with the state-technoscience duo, the non-publics exist at the threshold of the political community in an extra-legal relationship with the duo when the state of exception is declared. The categories of quasi-publics and non-publics come into being in connection with two different modalities of engagement with technoscience, evident more in the non-Western contexts. The state-technoscience duo operates through pastoral and biopolitical functions of governmentality respectively with the quasi-publics and non-publics, while offering full legal rights and entitlements to the scientific-citizen publics of the civil society. The categories used in STP studies are implicitly considered as universal in implications, and the alternative manifestations of technoscience that set off the emergence of and engagement with quasi- and non-publics in most of the world have not been legitimate sites for theorization due to the discipline's orientation toward Western industrialized nations and the empowered domain of civil society. All the three distinct modes of engagement specific to three different categories of publics—the engagement in civil society and political society as well as the suspension of the engagement itself in the state of exception—are hence subsumed within the domain of civil society, which is wrongly perceived as the exclusive sphere of engagement.

The clandestine categories of quasi-publics and non-publics are thus the 'missing masses' of technoscience, to paraphrase Latour (1992). Without recognizing these categories, STP studies cannot effectively understand technoscience in its diverse guises in the West as well as most of the world. This conceptual reorientation is possible only if STP studies engage the functional nuances of the state-technoscience duo while anchoring itself more in political philosophy and taking non-Western contexts more seriously. While the political society opens up an entire gamut of hitherto mostly invisible linkages of populations with the state-technoscience duo, the theorization on the suspension of legal rights and entitlements of the members of political community reveals the biopolitical operations of the duo in contemporary societies.

The conceptualization of the missing categories of publics raises further questions. For instance, what are the processes involved in the transmission of the claims and demands of the political society into the civil society? How do various institutional spaces and actors—especially media and court—function as machineries of translation? How do these political processes further problematize our understanding of expertise? In what different ways does the risk discourse get shaped by scientific-citizen publics and quasi-publics? How are the non-publics governed through the wielding of biopolitical power? How does their bare life get circulated/reproduced/employed within the spheres of political community? These questions and concerns demand more theoretical and empirical explorations while taking into consideration the wide variety of contexts in which quasi-publics and non-publics strive to assert their existence.

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