Original Article

Fixing Subjects, Fixing Outcomes: Civic Epistemologies and Epistemic Agency in Participatory Governance of Climate Risk

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Abstract

Participatory forms of policy-making have often been criticized for insufficiently theorizing the coproduction of publics and matters of concern. This paper seeks to investigate this relationship further by analyzing how the concept of civic epistemologies (CEs) can provide insights for understanding how political contexts shape both publics and contestable debates. Presenting fieldwork on cyclone governance in Odisha, India, based on the analysis of interviews with vulnerable fishing communities and state actors, the article shows how CEs influence the interdependent formation of

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vulnerable fisher and state subjectivities on one hand with representations of risk located in external biophysical atmospheric gases on the other, thereby sustaining reductive roles and futures. At the same time, the paper develops the concept of CEs by examining them as performative acts carried out by marginalized communities and state actors at the subnational level of a nonindustrialized country, thereby indicating sites at which epistemic agency can be increased and governed. Participatory knowledge production needs to understand how it is affected by CEs if it is to generate effective expertise for transformative futures in the face of increasing climatic risks.

Keywords
participation, civic epistemologies, expertise, climate change, coproduction, development

Introduction

The framework of participation is frequently proposed as a way of delivering expertise that is inclusive, relevant, and emancipatory in the face of urgent climatic changes (Norstrom and Cvitanovic 2020; Meadow et al. 2015; Reyers et al. 2015; Mauser et al. 2013; Chambers 1997, 2007). And yet significant challenges persist. Two central concerns are that participatory interventions often fail to empower marginalized actors or enable the emergence of diverse ways of knowing environmental issues (Turnhout et al. 2019; Cooke and Kothari 2001; Cornwall 2003; Felt et al. 2016). Scholars working in Science and Technology Studies (STS) have argued that this is because participation is often seen as a method in which actors are "integrated" which predefines their political and epistemic functions and identities; and as such have called for greater understanding of participation as a performative space in which its subjects (participants) and objects (knowledges) are interdependently and mutually brought into being—or "coproduced" (Chilvers and Kearnes 2019; Lezaun and Soneryd 2007; Jasanoff 2003). Various studies have examined how the roles and identities of participants do not preexist participation but rather are made and shaped through participatory practices that actively create publics, for example, through the ways in which problems are defined, engagement is structured, or the ideal of participatory research is imagined (Irwin 2001; Lezaun and Soneryd 2007; Michael 2009; Pallet and Chilvers 2013;

Krzywoszynska et al. 2018). However, important aspects of coproduction in participation remain underexamined. In particular, it is not clear how the coproduction of actors and issues is influenced by the political contexts in which it takes place (Chilvers and Kearnes 2016).

This paper responds to these challenges in three ways. First it argues, alongside Chilvers and Kearnes (2019), that participation is not simply an instrumental process of integration but needs to look at how epistemic agency is created. Epistemic agency here refers to the capacity of ways of knowing and their producers to gain authority in social contexts. Second, that this requires examining the embeddedness of actors and knowledge within constitutional relations between citizens, expertise, and the state, which determine what kind of knowledge is seen as legitimate, and who is seen to be producing it. To this end, this paper extends the concept of "civic epistemologies" (CEs)—culturally specific ways of assessing evidence (Jasanoff 2005; Miller 2004, 2008; Haines 2019)—to indicate the epistemic acts through which constitutional relations are enacted, thereby revealing spaces at which actor roles and issue-framings are interdependently formed. Third, the paper argues that CEs can consequently be understood as epistemic expressions of constitutional relations that manifest in the performative acts (Butler 1988) that are carried out by both marginalized and authoritative actors in society. In this way, this paper adds to the work of Chilvers and Kearnes (2019) by examining how constitutional relations shape the coproduction of actors and knowledge outcomes in participatory processes and sites (acts) at which these influences can be intervened upon.

I make these arguments by examining the coproduction of vulnerable citizens, the state, and risk expertise for governing cyclones in Odisha, India. Risk expertise arising from meteorological disasters presents a growing challenge for participatory climate knowledge-production since it frequently locates risk in external biophysical atmospheric gases, even though vulnerable citizens experience exposure as a complex matrix of socioeconomic factors (Gaillard and Mercer 2013). Understanding why this paradox persists is a key challenge of climate governance where STS insights about the coproduction (Jasanoff 2004) of actors and knowledge can intervene. The paper examines the establishment of Kantiagarh, a village of concrete bungalows created in 2017 as part of a World Bank–Government of Odisha (GoO) project to reduce the vulnerability of marine fishers to cyclones by moving them from thatched "kutcha" houses on the shoreline to new "pucca" houses inland. Despite fishers taking part in the project, the vision of risk on which it is based is reductive and constraining: while the

new village has kept fishers safer against the biophysical threats of wind and rain, it has also increased their livelihood precarity by moving them from alternative sources of income and increasing their household running costs. Drawing on analysis of documents and interviews with fishers and government representatives, I show how CEs have sustained particular fisher and state subjectivities in tandem with representations of risk located in external biophysical atmospheric gases, thereby reducing the futures that are imaginable for vulnerable fishers and upholding reductive expertise.

The remainder of the paper proceeds as follows. The next section discusses existing debates concerning epistemic agency in participation and how insights from the concept of CEs can intervene and be extended. The subsequent section gives a brief overview of the case study and empirical methods before examining (i) the acts through which CEs are performed in Odisha and (ii) how they have sustained biophysical representations of risk together with particular roles for fishers and the state. The analysis draws out how CEs fix fisher identities, state roles, and particular visions of risk in relation to one another, thereby perpetuating reductive risk epistemologies. The paper concludes by calling for STS research to pay greater attention to the acts through which constitutional relations are performed to better understand how epistemic agency is shaped by the coproduction of actors and knowledge in participatory interventions, and hence how "democratizing" knowledge methodologies can be governed more inclusively and transparently.

Epistemic Agency in Participation

A central challenge of participation is that, rather than crafting more relevant and socially inclusive knowledge, it frequently exacerbates power imbalances and reiterates preexisting dominant knowledge framings. For many scholars, this is because participatory practices facilitate the discursive reconstruction of existing structures of power (Cornwall 2003; Ferguson 1990; Li 2007; Foucault [1978] 1991) and research has called for greater acknowledgment of power imbalances to limit their effects on participatory experiences and outcomes (Turnhout et al. 2019). STS scholars however have urged more specific attention to how publics and matters of concern (Latour 2004) are made interdependently—or "coproduced" (Jasanoff 2004)—in participatory processes. This can be seen in at least two ways. First is the question of how the way that issues are defined brings publics into being by predetermining which actors become involved in participatory processes and what roles they are expected to perform (Marres

2007). Coproductionist scholars have examined how this process is iterative and mutual: publics and issues interdependently constitute *one another*, conceptualizing an entangled and codependent relationship (e.g. Felt and Fochler 2010; Chilvers and Kearnes 2019). Participation here is not simply engaging different people, but understanding how the knowledge products we make, such as graphs and spreadsheets, also constitute participating actors. Yet analysis has so far centered on discrete and situated studies of public engagement events (Michael 2016). Less attention has been directed to understanding how the coproduction of subjects and issues intermingles with the epistemic norms of negotiation in the democratic setting in which it takes place—and in particular how it is shaped by the "*political culture and constitutional relations* between citizens, science and the state" (Chilvers and Kearnes 2016, 15). Constitutional relations matter here because they influence the tacit roles that the government and its citizens expect one another to perform as part of a society's political–epistemic contract in the governing of issues such as environmental disasters and therefore affect how actor roles and risk expertise are coproduced (Jasanoff 2011).

Second, STS scholars have examined how actors shape their own participatory subjectivities. For example, Michael (2009) shows how publics perform *themselves* in relation to particular forms of knowledge and other publics through processes of differentiation and (self-)identification, suggesting a form of agency that emerges in relation to the context of the invited participatory space and structure. Felt and Fochler (2010, 219) see similar agency when they show how citizens "appropriate, resist and transform" the roles and identities that are assigned to them by the political machineries of participatory methodologies. Yet questions persist around where this agency comes from and how it is connected to the "places and spaces in which futures actually unfold" (Krzywoszynska et al. 2018, 795). For example, Wynne (2007) distinguishes the agency of "invited" and "uninvited" publics, suggesting that citizens who self-mobilize to contest a public issue have more agency on account of having assembled themselves according to their own concerns and meanings rather than an imposed issue-framing or normative agenda (Krzywoszynska et al. 2018). Yet, it is not always clear whether the epistemic agency of publics is enhanced or diminished by the capacity to self-mobilize. In their study of community forestry movements in Thailand, Forsyth and Walker (2014) show that, despite cognitively seeking different political outcomes, citizen actors unwittingly reify the same epistemic framings of forestry concerns as the state through hidden "discourse coalitions" (Hajer 1993). All this suggests that analyzing coproduction within participation also means asking,

first, how it is shaped by the constitutional relations in which it takes place and, second, how these contexts influence how we understand and govern the epistemic agency of publics.

CEs as Enactments of Constitutional Relations

The concept of CEs can intervene here by indicating sites at which constitutional relations between citizens and the state are enacted. CEs have been proposed by STS scholars as the institutionalized epistemic practices by which societies legitimize and deploy knowledge claims, and which simultaneously reflect and constitute the "dimensions of political order" that societies seek to "immunize or hold beyond question" (Jasanoff 2005; Miller 2008; Jasanoff 2004, 12). Existing work on CEs suggests how they might perform this role when they are enacted in street demonstrations, newspapers, lawsuits, and public bodies (Jasanoff 2005). For example, Haines (2019) shows how the deployment of CEs by educated nuclear activists in India's variable democratic context allowed them to reshape the political and epistemic landscape; whereas under Thailand's authoritarian regime, peasants had to adopt a social code to make their protests heard which bought them political concessions at the cost of reiterating reductive subjectivities and issue-framings (Forsyth 2019). These analyses indicate how, by reflecting constitutional relations between citizens and the state, CEs are avenues through which the epistemic agency of publics can both be enhanced and reduced.

   Yet the concept of CEs can also be developed. First, there are blind spots in our understanding of how CEs operate at nonnational scales in settings where democratic governance is more fragile or patchy (Ottinger, Barandiaran, and Kimura 2017; Haines 2019) and where knowledge production does not cognitively seek to establish a national political–epistemic regime (as with legal systems or environmental standards; Haines 2020; Miller 2005). National disasters can be particularly illuminating case studies in this regard since, as exceptional circumstances in which everyday governance is suspended, such events instigate a realignment of democratic norms, citizen roles, and desired expertise (Lakoff 2007; Collier and Lakoff 2015; Pelling and Dill 2010) generating "constitutional moments" (Jasanoff 2003, 2011) in which configurations of epistemic and political authority are rearranged, and CEs become more visible. Relatedly, there is little understanding of how CEs influence and are shaped by marginalized citizens and their informal institutions and practices (Beck and Forsyth 2015). In response, this paper examines how CEs are performed in the "stylized repetition of

acts through time" (Butler 1990, 179) to reveal how they are shaped by the more everyday acts of world-making done by marginalized citizens and government actors at subnational scales, in activities that do not cognitively seek to build a new epistemic regimes. Such acts suggest alternative spaces where the agency to open, close, and reconfigure futures are enacted and can hence be governed or increased.

Materials, Methods, and Challenges

This analysis draws on a qualitative case study of Kantiagarh, a village created to address the increasing cyclone risks faced by vulnerable fishers in the state of Odisha. Odisha is often considered a world leader in the production and successful implementation of disaster risk expertise (World Bank 2014; Walch 2019). Located on the northeast coast of India, on one hand, it is a place where publics coexist with various hazards: it experiences high rates of poverty, income inequality, and low rates of growth compared to the rest of India (World Bank 2016) in addition to frequent heatwaves, floods, droughts, and cyclones. On the other hand, following super cyclone "Odisha" in 1999, the state government adopted a specific mandate to safeguard its citizens from "natural" disasters. As such, Cyclone Odisha can be considered a constitutional moment (Jasanoff 2011) instigating the emergence of new forms of CEs of cyclone risk that form the basis of this research. The memory of 1999 is frequently recalled by citizens and government actors alike, who tell of 300 kmph winds battering the state for thirty hours, resulting in the devastating death of more than 10,000 people. The unprecedented scale of the disaster altered how risk was thought about in the state and how citizens and the government were expected to behave in times of disaster. It also led to the creation of the Odisha State Disaster Management Authority (OSDMA), which is examined here as a site at which CEs are produced and shaped.

Studying the establishment of Kantiagarh offers a way of examining the role of CEs of risk in the coproduction of vulnerable and state actor subjectivities and knowledge outcomes in climate policy-making. Its creation expresses a focus on safeguarding the corporeal safety of fishers that is symptomatic of a global trend in climate disaster risk to concentrate predominantly on biophysical threats, despite vulnerability often being experienced as a more complex socioeconomic and political phenomenon (Gaillard and Mercer 2013). It is also illustrative of the role of vulnerable people in shaping CEs: Kantiagarh's inhabitants were consulted on the establishment of the new village and have expressed vocal ambivalence

since, indicating both invited and uninvited forms of participation (Wynne 2007). Their influence in shaping the disaster expertise that governs their lives indicates how constitutional relations affect the coproduction of identities and knowledge outcomes.

The research is based on ethnographic fieldwork carried out between May 2019 and March 2020. This involved gathering policy documents (including disaster management plans, postdisaster reports, and nongovernmental organization [NGO] reports), newspaper articles, participant observation at government offices such as OSDMA, attendance at the UN Post Disaster Needs Assessment (PDNA) conference in Bhubaneshwar following Cyclone Fani in May 2019, three focus groups with fishers living in Kantiagarh, and forty-five semi-structured interviews with fishers, fishing trade union leaders, community leaders, NGO workers, and government officials. The interviews with Kantiagarh's residents were undertaken during walks around the village, during which I was shown the (as yet unopened) school and doctor's office, various homes, and the walk to the beach. Other discussions took place inside homes (where women residents showed me the kitchen, bathroom, and living area) on doorsteps with children playing nearby, outside the village shop, in the courtyard outside the school, and in the dusty shade of tall trees growing on the edge of the village. As such, these discussions took place within Kantiagarh "life." Interviews with government officials took place in government offices and meeting rooms, meaning official documents, photographs, and videos were often readily at hand to support statements. Despite this institutional setting, these conversations were frequently frank and informal, with interviewees reflecting upon challenges and perceived weaknesses in government policy. Such expressions of self-evaluation and reflective growth are indicative of the institutional culture of OSDMA which is consciously self-appraising. Trade union discussions happened in Bhubaneshwar, in homes, community spaces and during beach walks and often seemed guided by party political agendas.

The inhabitants of Kantiagarh who were interviewed were mostly men (twenty-five of thirty-one), aged between twenty-five and forty (eighteen of twenty-five), with families to support. Four of the men interviewed were older than sixty and fished solely for their own subsistence. As is common, the women interviewees were not fishers, they cared for children and the home, and sought informal manual labor work nearby. Interview questions with fishers focused on how risk is experienced. These included open ended questions such as "what makes you feel vulnerable to storms" and "what

would reduce this vulnerability." These were supplemented by multiple choice questions such as "on a scale of one to five, how supported do you feel by national government, state government, trade unions, friends, and family." Often, the same kind of question was asked in various ways to account for translation and to elicit deeper reflection. Government employees were predominantly asked open-ended questions such as "what factors make fishers vulnerable to storms," "what does the government do to address the risks faced by fishers," and "given infinite resources, what would disaster risk policy look like." Because of their openness, such questions acted as jumping off points for deeper conversations, revealing discourses around what risk means, where it comes from, and how solutions are thought about.

Interviews with the fishers and focus groups were carried out with the help of a local translator, as a mixture of Oriya, Telugu, and English was spoken; all other interviews were carried out in English, which is widely spoken in India. This presented challenges when interpreting meanings. For example, "climate change" was often used by fishers to refer to local changes in weather patterns, while government employees used it to refer to a political–ecological phenomenon with an assumed globally agreed upon meaning. As such, situating statements in the broader context of discussions was important to ascertain their significance. A second challenge was the expectation that, as a foreigner, I could assist fishers politically or economically, and so free prior and informed consent was important to obtain before all interviews and focus groups. At the same time, I became aware that as a woman, I was not expected to be in a position of power leading to an increased level of trust and openness. All names have been changed to protect interviewees. All interviews were transcribed on the day of interview and, along with other documents, subjected to discourse analysis (DA), reflecting the study's interpretivist approach (Fairclough, 2016; Hajer and Versteeg 2005). DA is particularly useful for identifying CEs because it situates them in their historical and social context and captures their fluidity and interactional quality, as in DA, meaning "never solidifies, but is constantly the object of political contestation" (Hajer and Versteeg 2005, 177). This detailed empirical material informs analysis of how CEs emerge, are sustained, and shape the coproduction of actor roles and knowledge outcomes in Odisha's cyclone governance. The following sections examine (i) how CEs are performed in the everyday acts of fishers and state employees and (ii) how CEs shape the coproduction of these actors and risk expertise.

Odisha's CEs

> We are staying here for shelter only, not life. (Saroj, forty, Kantiagarh resident)

> Vulnerability is all about giving them [coastal villages] a safe shelter. Pucca houses are disaster resilient—and this is the first priority. Life first then we think about livelihood. And for life we need houses. (Ramesh, OSDMA officer)

These two quotes are reflective of the central difference between discussions with Kantiagarh's residents and government employees: while for Ramesh, "life" means corporeal safety from physical harm, for Saroj, it entails and requires more than "only" this. All discussions with fishers and government employees reflected these different understandings of life. For example, a common complaint from OSDMA officers was that fishers wish to remain in their homes even when a cyclone alert has been issued. As one OSDMA employee, Pradip, described, "when [Cyclone] Phailin hit some people voluntarily went to the shelters, others had to be mobilized, and others had to be forced." For Pradip, and other OSDMA officials, "mobilizing fishermen is the biggest challenge." Yet, focusing on forcibly moving fishers misses and invalidates the complex socioeconomic reasons why they often want to stay. Many fishers explained that they prefer to stay in their homes because it is their only asset and they want to guard it from looting in the hours immediately proceeding and after the storm. For fishers, the risk of losing this asset takes precedence over the corporeal risk to life. This mismatch between government focus on *moving* fishers, and fisher desire to maintain their way of life is reflected in Saroj's simple statement that literally being "alive" is meaningless unless they can also pursue their sociocultural and socioeconomic "lives."

These different approaches to life also manifested in criteria for the construction of new pucca villages built by the Odisha Disaster Recovery Project, a World Bank-GoO funded program for reconstructing coastal housing and complementary improvements of public infrastructure and services. The primary focus here is to deliver physical safety from harm. As Kanchan, an OSDMA official involved in the project explained, "fishermen don't want to be far from the sea, but being near to the sea makes them vulnerable." Here, the only recognized form of vulnerability is the physical form that comes from proximity to the high tide line; the fishers "wanting" to be close to the sea is implicitly less relevant and important.

The result is that one form of vulnerability (biophysical) is addressed at the expense of others (social, cultural, and economic). Indeed, discussing a new project in Puri (a coastal town near the capital, Bhubaneshwar, that was badly affected by Cyclone Fani in 2019), Kanchan told me that they were currently deciding "which sites are vulnerable," which is determined by two criteria—the desire of the beneficiary to be relocated, and the tenability of the land—"whether it is in low lying areas or might flood, needs columns or pillars or sand filling." As Ramesh's pithy quote indicates, the physical–corporeal dimensions of vulnerability take precedence over their socioeconomic determinants, creating a binary between two supposedly distinct types of vulnerability, rather than regarding the two as interrelated. In this way, focusing on physical safety "then" livelihood support legitimates government inattention to these more complex determinants of exposure.

So where does this physical–corporeal CE of life come from and through what practices is it sustained in Odisha's risk governance? As discussed above, 1999 was a constitutional moment through which new CEs emerged in Odisha. The establishment of OSDMA turned disaster governance into a political activity for the first time, establishing an arena in which new relations between citizens, the state and risk knowledge could be developed through newly institutionalized activities. Simultaneously, this changed how risk was understood: as Suresh, a senior OSDMA employee noted, "1999 was a turning point in thinking about risk: before 1999 everything was relief-centric, there was no preparation . . . [it was] a paradigm shift." Since then, two key activities have performed and enacted this epistemology—weather prediction and building physical infrastructure—reflecting and constituting a physical–corporeal understanding of vulnerability.

Weather prediction carried out at the Indian Meteorological Department (IMD) in Bhubaneshwar is a central epistemic activity of constituting cyclone risk as a physical phenomenon in Odisha. As Ashok, an OSDMA employee explained, "community preparedness is based on communication of weather warnings . . . In case of a cyclone, OSDMA receive[s] the warning from IMD, analyzes it, and if necessary, bombard[s] the area with SMS." The Early Warning Dissemination System (EWDS), a series of 120 towers along Odisha's 300 mile coastline, seeks to "establish a foolproof communication system to address the existing gap of disseminating disaster warning up to the community level" and to "save the lives and property of inhabitants who are vulnerable and under risk" (OSDMA 2016).

This emphasis on weather prediction as a key strategy for keeping fishers safe was reflected in all the interviews with government officials. In discussions at the PDNA after Cyclone Fani, prediction was repeatedly and

explicitly connected to the provision of physical safety: "prediction is very important. It enabled 1.5 million people to be evacuated . . . all disaster management activity is dependent on forecasts" (Mina, Senior OSDMA official). The activities of weather prediction constitute disaster risk as a function of linear cause and effect—they reify the existence of an identifiable and bounded source of harm (wind speed and direction, wave height, and water levels), thereby excluding other more complex matrices of causality. Here, risk becomes fully captured by meteorological descriptors, mathematical and logical representations of phenomena that are external to the sociopolitical and human condition, yet nonetheless analyzable and understandable by humans. Vulnerability is then simply and linearly solved *through* these descriptors. Moreover, what risk *is* here is rendered unquestionable by the focus on rational linear visions of communication to reflect the rational linear vision of cause and effect. In this way, the scientific activities of generating the numbers, graphs and meteorological diagrams of weather prediction at the IMD, and the technological artifacts and practices of the EWDS all become sites at which biophysical CEs are performed.

These weather-monitoring practices and technologies and the focus on building physical infrastructure reflect and enact constitutional relations between citizens and the state in Odisha. First, the purely physical representations risk constitute vulnerability as something that is separate from politics, rather than embedded within and caused by it (e.g., through lack of sociopolitical entitlements). Locating risk in wind and rain and concrete walls gives the state the role of protecting citizens *from external nature*, rather than an actor partially responsible for their exposure to livelihood vulnerability. This means that the state is not positioned as an actor that should provide social or economic support for the complex livelihood effects of cyclones. Instead, the state and fishers become connected through their shared exposure to nature, joined in a common project of resisting its forces; rather than the state as a separate entity that should provide support *to* its citizens.

Second, these representations of risk reflect a historically imagined national identity in which the state is expected to achieve scientific and technological advancements on behalf of its citizens. In this relationship, the state becomes a symbol of national pride based on techno-scientific achievements; it is remote and impressive, using its specialist expertise on behalf of the nation. For example, on the IMD website, the practice of meteorology is traced to philosophical writings on cloud formation of the Upanishadas, who lived in India around 3000 BC, tracing the roots of

weather prediction science to the deep historical roots of the nation. Readers of the website are also told that the Brihat-samhita (an encyclopedia written around 500 AD) "provides a clear evidence that a deep knowledge of atmospheric processes existed even in those times," while modern meteorology is traced to the invention of the thermometer under British colonial rule, giving the practice its "firm scientific foundation." That is, meteorology here reflects and embodies the historic essence of India's scientific national identity and constitutes a role for the state as the purveyor of that coproduced identity and expertise. Meteorology is also vehicle for the state to lead its citizens to scientific advancement and geopolitical prestige: "India was the first developing country in the world to have its own geostationary satellite, INSAT, for continuous weather monitoring of this part of the globe and particularly for cyclone warning" (IMD 2021). Meteorological renderings of risk here reflect and produce constitutional relations of the scientific state leading its disaster-vulnerable citizens into a progressive future.

Third, these meteorological methods and practices also perpetuate a paradoxical tussle between certainty and uncertainty—between scientific man and capricious nature—that reiterates the constitutional relationship of the state protecting its citizens from depoliticized threats with advances in scientific measuring. On one hand the numbers, charts, and maps through which wind speed and rainfall are represented suggest phenomena that can be described with surety, yet on the other hand, the unpredictability of "mother nature" was a proverb frequently reiterated by meteorologists and disaster management experts. This ambivalence was a recurrent theme of conferences following Cyclone Fani in May 2019, in which the "unusualness" of a cyclone at that time of year rubbed up against the state's meteorological expertise: "despite [its unpredictability] Fani was helped by a very good forecast, it was 100 percent accurate—all disaster management activity is dependent on forecasts" (Mahendra, senior OSDMA official). This tension between untamable nature and man's technological quest to understand and control it encourages a sense of a limitless need for ever better science and technology to address cyclone risk and authorizes the state as the key holder of that expertise.

The second disaster mitigation activity that coperforms physical risk epistemologies with constitutional relations is the focus on building "robust structures at the coast [that are] based on meteorological issues" (Ramesh, OSDMA officer). These practices are specifically connected to the priority of protecting corporeal safety: many government officials reiterated that the cyclone shelters meant that during Cyclone Phailin in 2013, "despite lots of property loss, human loss was minimal" (Mahendra, OSDMA). Similarly,

the focus of the $319 million National Cyclone Risk Mitigation Project was on how building evacuation roads and bridges and strengthening embankments would "avert devastation" and enable "one of the most successful disaster management efforts in the world" (World Bank 2013). Constitutional relations are refracted through these epistemic practices and disaster mitigation activities. Specifically, there is an explicit distinction here between physical–corporeal harm and socioeconomic vulnerability: "human loss" is recognized and measured in terms of numbers of living or dead, not the extent to which the (e.g., economic) quality of that life has been diminished. The state here is expected to protect citizens physically, but not economically from nature, enacting particular constitutional relations of expectation and responsibility.

This section has examined how CEs of risk are performed in the context of cyclone governance in Odisha and how these practices reflect and constitute relations between citizens and the state. It has shown how biophysical and meteorological understandings of risk, in which expertise gains legitimacy by being described through wind and wave measurements and solved through physical infrastructure, scientific advancement and technological development, are performed through weather prediction and the building of physical infrastructures. The daily practices of measuring wind speed and direction by IMD and OSDMA staff and symbolic artifacts such as the EWDS and cyclone shelters all enact these CEs and also establish and reflect constitutional relations between the state and society. In these relations, nature is characterized as an external threat, separate from political society, and human risk as a physical rather than socioeconomic phenomenon. The state's role is to respond to "nature," which works to depoliticize the causes of harm and carve out specific roles for the state as protector and disseminator of information, and the citizen as victim and receiver of expertise. The next two sections examine more closely how this CE constitutes specific expected roles for the state and fisher-citizens, and how these roles serve to reinforce reductive visions of fisher futures in times of increasing climatic change.

Coproducing the Disaster State with Reductive Visions of Risk

> The most important thing is saving lives . . . . The warning ensures that no one goes fishing. (Suresh, OSDMA)

> IMD vindicated over Phailin prediction, proves wrong foreign forecasters. (*The Economic Times* 2013)

In a government office in Bhubaneshwar, Odisha's capital, an OSDMA officer is discussing the risks faced by fishers on account of cyclones and how the government addresses them through weather warnings. On his desk is a newspaper clipping from a 2013 edition of *The Economic Times*, in which the headline celebrates the IMD's skilled weather-forecasting for saving the lives of citizens during Cyclone Phailin, which struck the state in October 2013. These two quotes encapsulate one of the two roles the Odishan government is expected to perform during cyclones: the safe-guarder of life *above all else*. They are representative of how all interviewed government employees discussed their role in disaster management. That is, government legitimacy was specifically tied to its capacity to deliver mate-rial and corporeal safety from harm during disasters through meteorological forecasts—*direct* responses to *physical* threats. For example, Chhotray (2014) describes how after Cyclone Phailin the Odishan government "acquired a new halo overnight" for its evacuation program. Approximately 1 million people were moved in an operation overseen by the army and navy in which it was forbidden for anyone to stay in thatched homes in coastal areas. Government authority here derives from a specific subjectivity that is directly tied to the CEs of risk discussed above: its role is about responding to risk that is natural and apolitical with physical feats of moving citizens out of corporeal danger. As the Disaster Management Minister said at the time, "we are fighting against nature. We are better prepared this time, we learnt a lot from 1999" (Surya Narayan Patra, quoted in BBC 2013).

The interdependence of this subjectivity of physical protector with bio-physical risk epistemologies, such as those enacted through weather mon-itoring, derives partly from the authority that this coproduction of knowledge and identity bestows upon the state. This is indicated in external discourses of the government, for example, from International Non-Governmental Organization (INGO) reports and newspaper articles. News-papers often reported the logistical feat of saving lives with no attention to more complex dimensions of livelihood vulnerability. Frequent tropes involve the "death toll" and the logistical feat of moving hundreds of humans—"shifting more than 10 lakh people to safer places" (*The Hindu* 2019). Similarly, the World Bank applauded how, "the state government and OSDMA . . . identified safe buildings, constructed new shelters, charted evacuation routes, established evacuation protocols and strengthened coastal embankments." The government's role of saving life above all else here through physical infrastructure and temporally immediate response activities is a huge source of political legitimacy. Indeed, the political subjectivity of the state is built upon responding to the visible and

immediate effects of storms that can be directly linked to meteorological forces of wind and rain, which works to sustain this reductive vision of vulnerability.

Odisha's CEs establish this role for the Odishan government as physical protector of corporeal life on both a national and a global stage. As the opening quote suggests, in global settings, this role sticks due to its capacity to convey prestige upon the whole of India, by "proving foreign forecasters wrong," such that the Odishan government's identity as an expert in meteorological forecasting delivers political authority to the whole country. Yet, in national settings too, this identity distinguishes the Odishan government. Odisha is one of the most economically poor states in India, and accustomed to critique over its development and governance indicators. However, disaster management is the area in which the state stands apart from the rest of the country. OSDMA provided the institutional and normative blueprint on which the *National* Disaster Management Agency (NDMA) was created in 2005, and OSDMA officials are proud of the authority that this heritage bestows. As Bishnu, a senior OSDMA official commented to me, "OSDMA aims to be the leader in disaster resilience in India and the world." Bringing physical safety to Odisha's citizens through infrastructure and evacuations here forges legitimacy for the government of Odisha *within India and Odisha,* which is accustomed to being critiqued for its socioeconomic indicators. That is, while the state may fail to deliver *economic* development, it *is* able to save lives.

This subjectivity is accompanied by a second: the state as *morally* required to provide physical and corporeal safety from nature's unpredictable effects. This can be seen in historic laws that form the basis of the state's disaster governance. The 1994 Odisha Relief Code (ORC) and nineteenth-century Famine Codes outlined the duties of both citizens and government in the provision of relief (Dreze 1994; Chhotray 2014) and detailed specific identities that are to be adopted by the state and citizens. For example, the state is morally bound to assist "victims" and acts as a "sympathetic and concerned entity with a clear moral obligation to provide relief" (Chhotray 2014, 217). At the same time, citizens should make "concerted and continuous efforts to fight a common misfortune" (Odisha Relief Code, quoted in Chhotray 2014, 219). The deserving victim is one who is blameless, who has tried to improve their situation, but for whom harm was an unforeseeable and unstoppable force of nature. The state bestows relief as a gift in response to this external force. These roles directly reflect Odisha's physical, corporeal, and meteorological CEs of risk: the state is expected to provide *physical* relief to citizens, whose victim identity

is derived from the *external* and *naturally* occurring character of the disaster, which renders them and the state blameless. Indeed, as Mohan, a retired OSDMA employee noted, fishers are "at risk because of nature and so are always given immediate relief." Relief here is not given according to political norms of economic or sociological justice, rather the CEs discussed above work to exclude this role for the state, since it derives such political currency from addressing *nature's* wrath. The political legitimacy of the state, as a moral safe-guarder of corporeal life, requires that vulnerability is biophysical. This subjectivity hence directly reflects the distinction in Odisha's CEs between socioeconomic and physical risk. This government subjectivity thereby produces, and is produced by, a particular CE in which material and corporeal safety come to stand in for *all* causes of exposure. Indeed, as Suresh, a senior OSDMA official noted, "the principle learning from Fani is that we need more shelters. We cannot predict where the next cyclone will come from, so we need to have multiple shelters."

Coproducing the Disaster Citizen with Reductive Visions of Risk

> People do [fishing] not to make a profit, but because they want to live on it. (Trinath, thirty-three, Kantiagarh resident)

> In the old village we had many livelihood programmes. Women could get work there. This was good. Now we are very far from that. Now they are house-wives, staying at home. So the household has less money. (Atharbatia, thirty, Kantiagarh resident)

This section discusses how Odisha's CEs have shaped two specific identities for its fisher citizens thereby upholding reductive visions of cyclone risk. The first quote above is indicative of one of those subjectivities and is a discourse that underlay the majority of the discussions with Kantiagarh's residents: that fishers have not historically regarded fishing as a commercial activity and hence do not feel entitled to make political demands for socioeconomic benefits. Kantiagarh's fishing community has not historically connected political citizenship with economic support for fishing for various reasons. First, marine fishing developed in Odisha in the second half of the twentieth century—much later than in other Indian states with marine fishing communities such as Kerala, meaning their identification with Odisha as a political home is not well established. Moreover, these communities have since remained not just politically distinct, but culturally separate too, for example, speaking Telugu instead of Oriya. Second,

Odisha's marine fishing communities are ancestrally migrants from Andhra Pradesh and West Bengal who arrived in the 1930s and were allowed to stay and continue only because they did not pose any economic competition to the freshwater fisheries, nor cause any political problems for the government. As a result, there has been little political mobilization to make demands of the state to support their socioeconomic needs. This is particularly reflected in land tenure: in most new villages such as Kantiagarh, fishers do not own their new homes because they are built upon government land. This leads to a sense of detachment from the rest of Odishan society: "unlike the other citizens, fishing communities are in transit here" (Basu, Kantiagarh resident). Many comments arising from a focus group held in the shade of the school courtyard reflected this feeling of disconnect and exclusion from Odishan politics: "the government throws us from place to place. Very easy. One day the government may throw us to London" (Ajay, Kantiagarh resident); "people have rights but the government doesn't feel that they have rights. Our rights are secret. We are always exploited by political parties" (Maheswar, Kantiagarh resident). Third, fishing among Odisha's marine fishers has historically been a subsistence rather than a commercial activity (again, contrasting to other states such as Goa, Kerala, and Maharashtra) meaning these communities rarely seek commercial support from the state. As the quote above indicates, fishing has not historically been a commercial activity, "if they catch one fish they are happy" (Trinath). These three factors contribute to marine fishing in Odisha developing only a weak form of political organization, especially when compared to counterparts in Kerala, where fishers are politically organized to demand their rights based on socioeconomic needs (Kurien 1995).

What are the implications of this for understanding the effects of CEs on the coproduction of roles and risk expertise? The disinclination to make political demands for economic support that has historically characterized the identity of Odisha's fishers shapes—and is shaped by—Odisha's CEs of risk which separates physical from socioeconomic dimensions of vulnerability. According to this subjectivity, Odisha's fishers do not politicize their livelihood concerns, and in this way, CEs of risk work to fix them in a role of not significantly mobilizing for socioeconomic support in times of disaster. Being held in this role perpetuates a framing of risk that is dominated by physical understandings of vulnerability and the exclusion of socioeconomic visions of exposure.

The second fisher subjectivity that upholds and is shaped by Odisha's CEs of risk is the expectation that they require social "modernization" in the form of physical improvements to their living conditions. For this reason,

despite protesting how Kantiagarh has reduced incomes through its expensive cookers, lack of farming space, and distance from alternative forms of labor, the new village of Kantiagarh has been legitimized as a sufficient disaster response on account of providing symbolic "modernizing" gains. During one group discussion of nine fishermen, Santosh, aged sixty, described how things have changed in his lifetime: "in the past there was no difference between dogs and children, if a child had a wound it would get licked by dogs and be cured. Now things are different. Fishermen do not wear traditional dress and there are more clothes, food and desire for things." When asked if they would rather move to a different place closer to work, a resident in his early thirties called Dillip, wearing a T-shirt saying "experience consumption" responded that he was "very happy with [his] Western-style house." For women residents, the positives of Kantiagarh were often linked to its provision of "hygienic" living conditions. Yet "hygiene" here meant more than bacterially clean, but was connected to broader conceptions of contemporary living. Sabita, a mother of two in her mid-twenties, described the new houses as being, "modern, like a Western village."

Here, the "ideal of the hygienic housewife and mother" (Ikeya 2010) and the notion that "modern" water creates "modern" women (O'Reilly 2006) were prominent in interviewees' satisfaction with Kantiagarh. Hygiene here is an identity, a subjectivity that counterbalances, and even legitimizes the livelihood disbenefits of living in Kantiagarh. That is, they may have fewer opportunities to do alternative labor, but the prestige of the "modern" home is attractive—and supportive of a biophysical vision of cyclone risk. Residents also frequently referred proudly to the benefits of having a new school and doctor's surgery, despite both having remained closed due to lack of staff for the eighteen months since the village was opened, showing the precedence symbols of development often took over material assistance such as socioeconomic support. This subjectivity of expecting the government to give them "modernizing" benefits in the form of physical artifacts like cookers and infrastructure reflects the biophysical CEs discussed above.

Nevertheless, Kantiagarh's residents were also aware that these subjectivities also fix them in a situation that inhibits the socioeconomic transformation of their lives: "we will stay here, but there are no livelihoods . . . the government knows people want to go because here is not sustainable to live" (Basu). There is a sense here of being trapped and constrained socioeconomically by policies that have been set up to protect them materially and corporeally from cyclones, but misunderstand the complexity of their

livelihoods. There is also an acknowledgment of the compromise—a bargain—based on a subjectivity that is expected to be grateful and accepting of physical modernizations and that should not make political demands for livelihood assistance in the face of "nature's" risks. Yet a fear also exists that these compromises are not only making fishers more economically vulnerable, but leading to a form of perceived cultural hollowing, as more and more fishers migrate for work. As one fisherman explained, "here we don't have any jobs, so are bound to this place and occupation. That's why there is no change. One day, fisher community will be washed away, destroyed. In two decades, it will be gone." This risk policy, reified by CEs that fix the state and Odisha's marine fishers in particular subjectivities, produces a profound sense of stasis and disillusionment that is the antithesis of the transformational futures so much participatory policy-making seeks to conjure.

Conclusion: Advancing Participatory Outcomes by Examining CEs

How can participatory forms of policy-making better understand the coproduction of publics and matters of concern in order to deliver more inclusive and relevant expertise? This paper has sought to address this question by extending the concept of CEs to indicate epistemic practices where constitutional relations are enacted and demonstrate how these relations can fix actors in specific subjectivities that uphold reductive environmental risk expertise and prevent alternative more transparent approaches from gaining traction. Participation is often regarded as "democratizing" policy-making and "transforming" futures, especially in the governance of urgent climate risk. This paper argues that for participation to deliver such outcomes, greater attention needs to be directed to how participating publics and matters of concern emerge interdependently through contested political contexts. This adds to various debates concerning epistemic agency in participation.

First, it adds to work that examines participation as a vehicle of discursive control by indicating how different ways of knowing risk gain authority among different publics. Agency here does not just operate *through* knowledge, but the way issues are understood also influences how actors emerge in participatory contexts. This has particular implications for development contexts in the Global South, where the inclusion of marginalized citizens is often regarded as the key to developing expertise to generate transformative futures. This analysis shows that epistemic agency does not just reside in the

marginalized communities or state actors engaged in participatory interventions but in the shared assumptions that determine what form of knowledge is authoritative and who is seen to be producing it.

Second, this paper has added to work on CEs by showing how uncognitive localized acts of knowledge production, including by marginalized citizens, are sites at which CEs are performed, and constitutional relations between citizens and the state are sustained. In Odisha, CEs are enacted in the daily, localized activities of making graphs, charts, and bulletins of weather forecasts and in technologies such as the EWDS which represent risk as an unpredictable force of nature external to human society. They are also performed by Kantiagarh's fishers in their use of "modern" cookers, the *in*capacity to do alternative labor, and playing on the walls of the closed new school building. Yet these measurements, activities, and artifacts are also sites at which constitutional relations between risk expertise, citizens, and the state are coperformed. For example, the purely biophysical representations of risk constitute vulnerability as something that is separate from politics, and the state as the safe-guarder of victim-citizens from nature, which discounts disruption that is caused by preexisting socioeconomic vulnerabilities—and the government's responsibility for them. Moreover, these acts show how CEs can operate in noncognitive and nontransparent ways to coproduce actor roles with unwanted knowledge outcomes. It is likely that such localized expressions of CEs will represent fluid sites of constitutional change in Global South contexts, where democratic regimes are more patchy and contested. Nevertheless, further research could usefully investigate the extent to which local acts might represent opportunities for shaping CEs in more established democratic orders.

Third, this paper has added to coproductionist work on participation (Chilvers and Kearnes 2019) by demonstrating how the effects of constitutional relations between expertise, citizens, and the state can be examined through the concept of CEs. Existing coproductionist research has examined how publics and matters of concern constitute one another, but often without incorporating the role of wider political cultures. Yet these contexts have important effects. For example, the coproduction of the state's role as safe-guarder of life rather than livelihoods and a reductive vision of risk indicates how Odisha's CEs, which validate renderings of exposure as physical, corporeal and external, forecloses the capacity to think about vulnerability also as a long-standing socioeconomic and political phenomenon. This has various implications for how agency in participation is considered and governed. First, while previous research has suggested that "uninvited" publics have greater agency than "invited" publics, this paper

has suggested that the constitutional relations that characterize those contexts can mitigate as well as enhance that agency, by fixing actors in roles that uphold reductive issue framings. This means that practices that seek to democratize knowledge by bringing together different knowledge-producers need to consider how their subjectivities are forged interdependently with local epistemic structures to understand the political and knowledge outcomes they produce.

This also has practical implications for participatory methodologies. Rather than focusing on *how* to integrate knowledge users, practitioners might pay more attention to the knowledge that is produced—and their own role in shaping it—to examine the extent to which knowledge *outcomes* reflect existing epistemic hegemonies—and why. This would entail a multi-stage process. Analysis of knowledge outcomes after the first round of participation might draw attention to dynamics such as hidden discourse coalitions or CEs, whose sources and implications could be discussed in further rounds of group deliberation. Making visible such unseen epistemic alliances could make marginalized citizens aware of sources of epistemic disempowerment, and thereby engender the production of alternative knowledges. More generally, this research suggests there is a need to be more reflexive about what roles we expect participants to perform and why, whether those roles are achievable, and what *kind* of knowledge and political outcomes we want participation to deliver. All these questions are sites of political contestation and constitution.

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