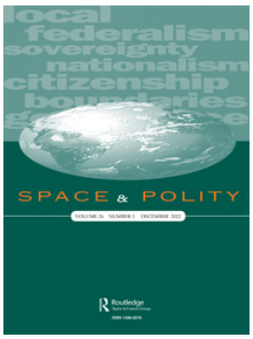

Space and Polity

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/cspp20

How water features: negotiating and reassembling the sociomaterial politics of central Californian groundwater

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To cite this article: Christopher Lawless (2023): How water features: negotiating and reassembling the sociomaterial politics of central Californian groundwater, Space and Polity, DOI: 10.1080/13562576.2023.2239153

To link to this article: https://doi.org/10.1080/13562576.2023.2239153

SPACE AND POLITY
https://doi.org/10.1080/13562576.2023.2239153

Routledge
Taylor & Francis Group

How water features: negotiating and reassembling the sociomaterial politics of central Californian groundwater

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ABSTRACT

This article explores responses to the California Sustainable Groundwater Management Act (SGMA) to challenge post-political and governmentality perspectives on environmental management. I chart how SGMA reconfigured sociomaterial orderings in the Central Valley region, enacting a liminal moment for groundwater culture, between a historically entrenched libertarianism and an emergent communitarianism. Local organizations functioned as boundary organizations, re-shaping groundwater assemblages by negotiating boundaries between authority and marginalized communities. I argue that the structures and institutions typically critiqued in post-political and de-political theorising can be more fruitfully conceptualized as part of sociomaterial assemblages within which there lies potential for transformative groundwater politics.

ARTICLE HISTORY
Received 31 January 2019
Accepted 15 July 2023

KEYWORDS
Sustainable groundwater management act; drought: groundwater management; sociomateriality; post-politics

1. Introduction

Between 2011 and 2017, much of the State of California experienced drought conditions defined as ranging from severe to exceptional. The impacts of this drought were reported to include disruption of food production and groundwater supply, reductions in agricultural productivity, loss of rural livelihoods, consequences for human health and well-being, and conflicts over the use of water resources. The experience of the drought raised questions over how water had been viewed and valued in California, and whether a new groundwater culture was needed in the event of severe and long-lasting drought conditions re-occurring in the future (Alaniz et al., 2016).

While drought and the problems associated with groundwater overdraft had long been acknowledged by Californian lawmakers, the first binding state-wide legislation, the Sustainable Groundwater Management Act (SGMA) was only passed in the midst of the drought in September 2014. SGMA nonetheless represented a notable break from previous legal approaches in the State which reflected a libertarian ideology of groundwater management (Samuels, 2016). California groundwater law pre-SGMA

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represented a complex but weak patchwork of legislation and regulatory measures concerning extraction rights (Leahy, 2016). SGMA compelled the formation of regional Groundwater Sustainability Agencies (GSAs) to develop localized long-term Groundwater Sustainability Plans (GSPs) for storage and management, and to achieve sustainability twenty years from the start of implementing these GSPs (University of California, Davis, 2015, p. 4). Implementing SGMA has been regarded as an ostensible exercise in devolution and decentralization, involving clearly defined geographical boundaries of groundwater management, locally-tailored rules and governance mechanisms, active monitoring for compliance and support for local institutions by central government (Aladjem & Sundling, 2015, p. 2). Localized market systems for trading groundwater have been considered as part of GSPs (Eastern Tule GSA Joint Powers Authority, 2017).

2. Approaching the issue of the 'properly political' anew: Sociomaterial assemblages

The emphasis on localization in SGMA reflects a trend which has been critically examined in other examples of groundwater policy research (Birkenholtz, 2009). Some of this literature has critiqued the notion that these environmental policies empower individuals and communities. Commentators such as Agrawal (2005) have instead claimed that these policies reflect a change in the way governments exercise power rather than any genuine devolution (Agrawal, 2005). Some studies have argued instead that ostensible efforts to decentralize groundwater management actually represent the recentralization of government power and attendant hegemonies (Birkenholtz, 2015) and which construct compliant subjects (see for example Haggerty, 2007).

Another strand of relevance to water governance is the 'de-politicization' or 'post-politics' thesis (Beveridge et al., 2014). Associated with authors including Slavoj Zizek, Chantal Mouffe, Jaques Ranciere and Eric Swyngedouw, de-politicization and post-politics have been used to describe the rise of technocratic management and attendant policy-making (Swyngedouw, 2010). These authors argue that post-politics and de-politicization are themselves political-economic hegemonies which silence dissent (Mouffe, 1999; Rancière, 1998; Swyngedouw, 2010; Zizek, 1999). In these de-politicized or post-political orders, politics, in the sense of being conceived of a space of ideological contest or competition for voices to be heard, is regarded as having been foreclosed by governance which assumes the inevitability of technocracy. Post-political orders are seen to manage opinions and participation in so-called 'good governance' which, broadly speaking, uphold a neoliberal status quo (Swyngedouw, 2010). According to Swyngedouw, post-politics does not constitute populations as 'heterogeneous political subjects' (Swyngedouw, 2010, p. 221), but instead constructs the populace as homogeneous and powerless in the face of environmental threats. In this context issue-agendas are restricted to strictly technical matters.

Post-political critics thus see participation in environmental governance as restricted. According to Swyngedouw (2009), those who do participate, which may include government, but also non-governmental organizations (NGOs) and community-based organizations (CBOs), do so only through strictures which reflect post-political orthodoxy, or risk becoming side-lined (Swyngedouw, 2009, p. 615).

Zizek and Ranciere argue that those excluded from such agendas may reclaim their voice by reflexively questioning the institutions, policies and interests which underpin post-political orders (Rancière, 1998; Zizek, 1999). These forms of contestation are what Zizek (1999) terms the 'properly political' (Anderson et al., 2016), which entail a politics of disruption and contestation to seek new orders and structures.

The 'post-politics' or 'de-politicization' critique has itself however faced questions over exactly what constitutes 'properly political' responses. Anderson et al. (2016) argue that to dismiss any emerging interaction between governmental and non-governmental actors as post-political, even if there exists transformative potential, appears ironically to be a foreclosing gesture itself (Anderson et al., 2016, p. 155). In their study of water management in Montana, Anderson et al suggest that the contours of the post-political and the properly political are not necessarily clearly defined. Instead, they suggest that seemingly post-political contexts contain within them the conditions of possibility for transformative properly political outcomes. These conditions may lie through the tendency of neoliberal post-politics to entail potentially fluid and heterogeneous assemblages of actors, societal interventions (e.g. legislation, financial transactions etc.) and material objects (Latour, 1999) which may lead to hitherto unanticipated arrangements emerging from within apparently hegemonic orders (Ong, 2007).

While providing a fruitful provocation to the post-politics thesis, Anderson et al.'s study nonetheless depicts individuals as accepting changes proposed by government actors. Questions thus remain over whether sociomaterially reassembled relations between actors, space and resources reflect genuinely disruptive or transformative proper politics, or whether they merely represent conformity to post-political orders through other means.

Political geography has devoted growing attention to the significance of sociomaterial assemblages, drawing upon work associated with Science and Technology Studies (STS) (Brenner et al., 2011; Callon, 2007; Latour, 1999). Related research has charted how contesting political visions may be pursued both through, and as a consequence of, sociomaterial assemblages (Delina, 2018; Jasanoff, 2004; Jasanoff & Kim, 2009; Smith & Tidwell, 2016). Yet some critics, such as Brenner et al. (2011), express reservations about the scope of STS-aligned assemblage perspectives to engage in political-economic critique. Brenner et al claim that

> this approach offers no clear basis on which to understand how, when, and why particular critical alternatives may be pursued under specific historical–geographical conditions or, more generally, why some possibilities for reassemblage are actualized over and against others that are suppressed or excluded. (Brenner et al., 2011, p. 131)

Brenner et al highlight the paucity of critical analyses which might consider whether certain sociomaterial assemblages of environmental governance reflect post-political hegemony, or disruptive or transformative possibilities – or at least identify where the potential for such challenge might lie within.

This article pursues the question of where and how sociomaterial assemblage and reassemblage may challenge political orders and open up spaces of contestation and potential transformation. The article also examines how it is possible to empirically trace such potential transitions. The article takes as its focus developments concerning SGMA and related responses to groundwater issues in Central California. An assemblage

framing is used to chart how SGMA reconfigured relations between *inter alia* actors, legislation, policy, technical infrastructures and the environment, resulting in new rules and transactions. The article suggests that these sociomaterial responses have enacted a liminal moment for groundwater culture, between a historically entrenched libertarianism and an emergent communitarianism, whereby new assemblages have been promoted and facilitated by some parts of society while opposed by others. The article considers whether SGMA can be regarded as emblematic of a post-political order, or if, and how, it has created space for properly political transformation enabling the marginalized to be represented.

Attention is given here to the role of Californian NGOs and CBOs who worked with communities and shaped arrangements which emerged in the wake of drought and SGMA. The article explores how these organizations negotiated the emergence of sociomaterial orders by participating within and shaping networks and assemblages, and in doing so, how they constructed the threshold of possibilities between the present and properly political futures.

This article argues that these NGOs and CBOs represented a condition of possibility for transformative orders by functioning as social 'boundary organizations' mediating

> between different social worlds and communities to bring people on either side of a boundary together to increase mutual understanding of one another's perspectives, capacities and needs while allowing individuals within the organization to remain within their respective professional boundaries and to maintain their responsibility to their different constituencies. (Franks, 2010, p. 286)

This framing enables this article to explore how NGOs and CBOs were able to use SGMA as an opportunity to engage in potentially transformative forms of politics by promoting a communitarian alternative vision opposing an entrenched libertarian attitude to groundwater.

The article proceeds as follows. The locale of study is introduced together with a summary of methodology. The article then presents an account of the key findings which emerged through the study. This included challenges to the implementation of SGMA and local issues concerning water rates and proposed limits on groundwater use. The responses of NGOs and CBOs to drought and SGMA are then described. This enables the article to argue for the value of the boundary organization framing in illuminating how social boundaries were transcended to pursue more inclusive policies. As well as providing marginalized communities with representation, it is argued that boundary organizations were able to promote cultural change to groundwater by reassembling sociomaterial relations. This was pursued by selectively working with authority at times, but by also utilizing space unoccupied by government.

3. Researching the transformative potential of sociomaterial assemblages

This study focuses on responses to the 2011–2017 California drought and the relationship between central government and periphery as mediated via SGMA. Research focused on the Central Valley region, with particular focus on Tulare County, within which the City of Porterville and the neighbouring unincorporated community of East Porterville reside. The latter was widely regarded as having experienced some of the

most serious effects of the drought (Zavala, 2016). A variety of data collection methods were used. The collection and examination of a range of documents took place prior to, during and after fieldwork undertaken in the Central Valley in 2016. Documentary material included both public and non-public domain material, such as academic research papers, news media and literatures produced by non-governmental and community-based organizations. Pre-fieldwork documentary analysis enabled identification of appropriate locations to study and identified respondents who had experience of local responses to drought and relevant knowledge of the area. The fieldwork informed a thematic analysis, which allowed post-fieldwork documentary analysis to corroborate and clarify field data. Post-fieldwork documentary analysis incorporated minutes and agendas of meetings and data on groundwater presence and usage. Reports published by local media emerged as a useful data source. Hernandez et al. (2018), in their use of local press review in an analysis of climate change adaptation in Tenerife, highlight the utility of this source for understanding how issues are framed, and to help map relevant actors and policies (Hernandez et al., 2018; Paneque Salgado et al., 2009). A local press review in this study clarified issue framings and enabled a chronology of drought responses to be developed.

Attendance and participation at two Californian conferences on the drought, involving a variety of recognized expert speakers prior to fieldwork in the Central Valley provided an informed overview of the drought and SGMA. A number of interviews were conducted between April and June 2016, with respondents comprising: representatives of NGOs engaged in water-related work in the region, representatives of CBOs, academic researchers, a local journalist who reported on water issues in the region with over 30 years' experience of the issue, and members of the public who had been affected by water shortages. Fourteen respondents were interviewed in total (see Table 1), all of which were 30–60 min in duration. All respondents were informed about the project prior to interview. In addition, two participant observation exercises took place, at a public engagement meeting organized by an NGO in East Porterville, and a public meeting of Porterville City Council. During the latter event, 29 members of the public expressed their views on water issues. These exercises provided further information on how issues were framed and public attitudes toward SGMA and related policies. This fieldwork enabled a number of themes and observations to be captured which were corroborated across the data sample.

Table 1. Interviews conducted April–May 2016.

Interviewee 1	Community-Based Organization Representative in East Porterville
Interviewee 2	Community-Based Organization Representative in East Porterville
Interviewee 3	Journalist reporting on water issues in Porterville Area
Interviewee 4	Representative of Community Development Organization
Interviewee 5	Representative of Community Development Organization
Interviewee 6	Resident of East Porterville
Interviewee 7	Resident of East Porterville
Interviewee 8	Representative of Non-Governmental Organization
Interviewee 9	Academic Researcher specializing in Water Issues in Central Valley
Interviewee 10	Academic Researcher specializing in Water Issues in Central Valley
Interviewee 11	Academic Researcher specializing in Water Issues in Central Valley
Interviewee 12	Representative of University-based Rural Development Centre in Central Valley
Interviewee 13	Representative of University-based Rural Development Centre in Central Valley
Interviewee 14	Representative of Non-Governmental Organization

4. Enacting and contesting SGMA

Enacting SGMA was found to be challenged by a series of perceived contingencies relating to information and costs. A number of respondents mentioned the challenges to evaluating groundwater levels across the State of California, and opined that such data was incomplete or difficult to acquire (Interviewees 4, 5, 9, 10, 14):

> Knowing how much groundwater is coming out is key. (Interviewee 10)

> There is a big barrier for water information in California. (Interviewee 9)

> We might find bad water at 200 feet [drilling into the ground] but clean water at 400 feet. We need knowledge of what is there and what is available. (Interviewee 5)

Californian legislation has mandated certain arrangements to monitor groundwater, in the form of California Statewide Groundwater Elevation Monitoring (CASGEM), described as a system which 'makes groundwater monitoring information available to the public through a collaboration between local monitoring parties and the State of California's Department of Water Resources to collect groundwater elevation information state-wide'. (DWR, 2014). While CASGEM data has been used to try to estimate groundwater levels across the State, it became evident that considerable work was still required in the Central Valley to establish more accurate estimates. The employment of hydrologists and hydrogeologists to evaluate the quantity and quality of groundwater was deemed a necessary part of GSPs in this area (Eastern Tule GSA Joint Powers Authority, 2018).

In addition to monitoring groundwater levels, monitoring usage and supply were identified as other key informational challenges. Historically there has been relatively little regulation of drilling for groundwater, and private wells for individual households and farms have been commonplace. One respondent stated 'anyone can stick a straw in the ground' (Interviewee 9). It was reported by another respondent that Tulare County, within which Porterville and East Porterville reside, had continued to freely issue well drilling permits even at the height of the most recent drought (Interviewee 8), a claim which was also voiced at a public meeting of Porterville City Council. While local authorities continued to issue well permits, a number of respondents reported that the authorities struggled to monitor those wells which were at risk of running dry or had become contaminated with pollutants such as nitrates (Interviewees 4, 5, 9, 12, 14)

> The California Government are trying to set up mechanisms to monitor groundwater usage for SGMA but the science is not there to do it remotely, its difficult to ground troop. (Interviewee 9)

> Even today in Sacromento the California State Government are still to map those private wells at risk of losing water and contamination. There are logs of wells when they are drilled, but the State hasn't other data nor have counties. (Interviewee 14)

> We sampled wells, checked the number of dry wells, we went to sample one, it had gone dry two weeks ago. There was nothing to sample. (Interviewee 5)

Developing systems for monitoring groundwater levels, quality and usage featured prominently in discussions in the Porterville region concerning GSPs. The installation of meters was proposed as one way of monitoring groundwater use, but one respondent

suggested that this might face considerable opposition from farmers who were reportedly suspicious of being surveilled (Interviewee 3). The agricultural industry in Central California had reportedly gained representation within local government. They were seen as able to influence whether or not metering arrangements would be adopted as part of local GSPs. It was also reported that the State had been unable to introduce regulations to address nitrate contamination due to pressure from the agricultural lobby (Interviewee 8, also reported at NGO public meeting, 2016).

SGMA obligates regions to not use more groundwater than is collectively available. Numerous reports suggested that this could restrict water usage, both domestically and commercially in Porterville to no more than 0.5 acre-foot of water per acre land. In 2016, the City of Porterville was reported as using an estimated average of 0.81 acre-foot of water per acre land, which itself represented a reduction from 1.11 acre-feet of water per acre two years previously (Elkins, 2016).

The 0.5 acre-foot per acre limit was claimed to be wholly insufficient for landscaping and agricultural use, and only enough for indoor use (Elkins, 2016). It was claimed by one respondent that agricultural production of crops required 2–4 acre-feet water per acre land, depending on the crop (Interviewee 3). It was also reported that if farmers were to rely solely on their own groundwater supplies, they would only be able to farm a quarter of their current available land (Ballard, 2016). Interviewee 3 claimed that this could wipe out 60% of all agriculture with highly adverse consequences for jobs in the region. This respondent, who had familiarity with the local agricultural sector, stated that farmers in the Porterville area had become increasingly dependent on groundwater due to the lack of surfacewater in 2014/15 (Interviewee 3).

Another challenge facing the implementation of SGMA concerned the increased costs to users. Proposals to substantially increase water rates charged to Porterville citizens was another significant issue identified during fieldwork. Porterville City Council had for some time charged what were regarded as some of the cheapest rates in the region, at $29.80 per month. In May 2016, it was proposed to raise rates to $55.11 per month, an increase of over 84%. Further increases were proposed to take place every subsequent year until at least 2020, leading to an average charge of $60.10 per month (Elkins, 2016). These increases were approved at a meeting of Porterville City Council on 19 July 2016 (Cole, 2016).

Local newspaper reports framed the water rate increases as being largely dictated by the State of California government. A local public works director was quoted as citing three reasons for the increases: reduced revenues to fund infrastructure, SGMA, and the California Governor's Executive Orders defining water conservation requirements (Cole, 2016). It was reported that 'the State is requiring that the City charge enough to be able to pay back any future loans to improve the City's water capacity' (Porterville Recorder, 2 May 2016b). A City of Porterville document was quoted as stating that SGMA planning had led to 'multiple associated – and previously unnecessary costs – including significant water purchases for recharge, wastewater treatment for use for landscape watering, well monitoring, reporting and new infrastructure' (Porterville Recorder, 2 May 2016b). This document stated that Porterville City officials were also pursuing extra state financing to develop 'additional water infrastructure' to respond to the drought, but that current water rates were below the 'State requirement to qualify for grants and loans' (ibid). City of Porterville authorities were reported as considering

the purchase of water from the nearby Friant-Kern Canal, but that this scheme would entail costs to construct a system to deliver that water, as well as the cost of the water itself (Porterville Recorder, 20 June 2016a).

The water rate increases, framed as necessary to meet the edicts of the State Government and SGMA, can be regarded as having recruited local government officials, citizens and other local stakeholders into a new series of relations with water providers, State Government and material resources (Latour, 1987). The financial contributions of water rates paid by citizens were framed as necessary for SGMA to function at a local level but to also meet the demands of State Government. Following Latour (1987), increased water rates and proposed usage limits represented re-shaped relations between government bodies as 'centres of calculation', through which groundwater is monitored at a Statewide level and where laws and edicts are produced, but dependent on links with 'centres of operation', namely sites where SGMA was to be implemented on the ground through the sourcing and movement of new water supplies, and local controls on its use (Jons, 2011; Latour, 1987).

This study however identified some enculturated perspectives which challenged these moves. A number of respondents spoke of a pronounced sense of disenfranchisement among some inhabitants toward governmental structures (Interviewees 1, 2, 3, 12, 13, 14), and a 'culture of not trusting' authorities (Interviewee 14):

> Where were the OES [Tulare County's Office of Emergency Services] in the first nine months [of the drought]? (Interviewee 1)

Thus one notable theme which emerged from interviews was the apparent reluctance of residents, particularly those living in isolated communities, to engage with authorities:

> People like rural living, they don't like being told what to do and what not to do. (Interviewee 3)

Interviewee 13 worked for a rural development NGO which was part of a local university:

> There is distrust in communities of local government but the [university] logo is a symbol of trust. Communities tend to trust two bodies, faith based groups, and school districts … with the [university], trust is subliminal, it's an educational institution. (Interviewee 13)

Some respondents mentioned how living in isolation was a choice for those who, as one respondent put it, exhibited a 'don't fence me in mentality' (Interviewee 12), and that for these individuals, citizenship was associated with high costs and taxes, and having to abide by the rules of others (Interviewee 12, 13):

> These people don't like rules … the County doesn't have the ability to police them. (Interviewee 12)

> They don't want handouts or to wait in line. (Interviewee 13)

Several attendees at a public meeting held at Porterville City Council to hear views on proposed water rate increases opposed these plans. They also spoke of a lack of trust between residents and government, or did not believe all citizens were fully aware of the proposals. These views were however challenged at the same meeting, with others arguing to accept the rate increases for the greater good. One attendee for example voiced the opinion that people had 'to stop thinking about individual selves', suggesting

that the drought had helped to facilitate some change in thinking not just about water but about citizenship more generally. Another attendee suggested that citizens might 'buy in' to the planned increases if the Council could demonstrate clearly how the money would be spent. Such deliberations suggested that SGMA had enacted a liminal moment between two contending imaginaries: an individualist or libertarian imaginary also reflective of previous legal doctrines (Leahy, 2016), and a communitarian imaginary more commensurate with SGMA. This study identified signs of acceptance among some toward the legislation and its implications amid wider signs of cultural change toward water sustainability in everyday life. This emerging communitarianism is evident in an editorial from a local newspaper, the *Sacramento Bee*:

> Taking more water out of groundwater basins than goes in pits neighbour against neighbour in the San Joaquin Valley and in some coastal and Southern California areas. (Editorial, 2014)

Other data however pointed to outspoken opposition to SGMA. Powerful agricultural interests and city residents appeared to resist the implementation of SGMA, accompanied by contradictory practices from among local governmental structures. Reassembling social orders and material infrastructure to implement the vision of SGMA emanating from State legislature faced significant challenges. The next section traces how NGOs and CBOs pursued other ways of reassembling groundwater governance.

5. NGO and CBO activity

Fieldwork identified how community-based and non-governmental organizations successfully lobbied to connect residents in unincorporated East Porterville to the Porterville City water supply (Interviewees 1, 2, 6, 7):

> The City of Porterville is now setting up a water system to 115 homes in East Porterville … without water people can't flush the toilet, there's no bathing, no laundry, no hot water, so they have to heat water up. (Interviewee 1)

The CBO East Porterville 4 Water Justice played a prominent role in advocating for mains water connection (Interviewees 6, 7). Recruiting previously marginalized communities into SGMA through connecting them to the civic water system may not have only boosted water rate revenue, but also ameliorated the effects of the drought in a particularly hard-hit area. At a public meeting organized by a local NGO, interviews with East Porterville residents gave reasons for supporting the rate increases. One resident who had been without water opined that even a rate of $60 per month would considerably ease the current costs brought about by his family's reliance on public laundrettes (Interviewee 6). Without a functioning water supply, this respondent estimated that his household, which included a family of five children, had spent $70–80 per week on laundrette charges. A reliance on public laundrettes was also problematic in that it risked clothes becoming contaminated from those of other users. This respondent claimed that many public laundrette users were East Porterville residents who worked in farm fields, often for up to 10–11 h a day. Their clothes could become very dirty and contaminated with potentially harmful substances such as pesticide chemicals. The possibility that such contamination might have been left in a washing machine from a previous load necessitated

the use of pre-washes, which increased the cost of public laundrettes further. This respondent looked forward to the prospect of being able to wash clothes at home where such problems would not arise. Elsewhere, water was valued as an important resource to maintain community cohesion. One respondent working for a CBO in East Porterville talked of how lack of water prevented residents from important and traditional gestures such as making coffee for guests at a funeral (Interview 1).

The centres of operation across which laws and edicts sought to be enacted manifested themselves at the grassroots level of community and household water supplies. The key challenge for implementing SGMA concerned how the centres of calculation and operation could be linked. State legislature was often portrayed as distant and out of touch from life in Porterville, particularly in local news media (Porterville Recorder, 2016a, 2016b). The distancing was not just geographic, but social too. Some communities were framed by one respondent as cautious of both government and NGOs, and spoke of the need to respect their autonomy:

> Communities tend to be sceptical about outside interests coming in, or people who come, look, feel sorry for them … another scenario would be when NGOs ask for demographic data, go round lots of districts but they may make empty promises. [We] develop word of mouth, finding local champions who believe in our work, we work hand in hand, we live and breathe rural communities … we understand their hardships and opportunities. People in urban areas don't understand, we understand traditions, we speak their language … we try not to tell them what to do, we listen to them. We act as their GPS too help them where they are trying to get to. We host events in their backyards, we always try to accommodate them. (Interviewee 13)

Another respondent described some communities as lacking political 'savvy', compared to the lobbying capacity employed by powerful agricultural interests:

> There are small economies of scale to deal with water quality in marginalized communities. These communities are not good at engaging with local government. (Interviewee 8)

The perceived relationship between politicians and government officials on one hand, and these communities on the other, was marked by significant division, and a claimed top-down outlook on the part of the authorities. This respondent talked of a 'we know what's best' attitude among officials (Interviewee 8).

Another aspect raised in fieldwork was the perceived sluggishness of government, at both County and State level, to address the drought and related problems (Interviewees 1, 3). Resourcing was identified as an issue. Tulare County was described by one respondent as not well-resourced, and hindered by the State's delay, seemingly through bureaucracy, to provide additional financial help (Interview 3). The claimed inability on the part of State authorities to formally declare the drought as a disaster or emergency, which would have triggered quicker funding (albeit with 25% match by the County (Interview 14)), was seen as more costly in the long term (Interview 3). Implementing longer-term solutions to address groundwater issues was perceived by Interviewee 14 as problematized by local government culture. County officials tended to be sheriffs, familiar with tactical responses to immediate emergencies, but with questions over their ability to consider more long-lasting solutions (Interview 14). A CBO representative in East Porterville talked of how bureaucracy impeded requesting aid from local government (Interview 1). This respondent talked of the requirement to record data in terms of households

visited in the name of taxpayer accountability, which was seen as a disincentive. Instead, this respondent talked of a perception of freedom by not being tied to government structures:

> They can't control us … they can't fire us. (Interview 1)

Fieldwork identified how various NGOs and CBOs had intervened in the midst of the drought and had promoted SGMA and related measures, with varying levels of government engagement. CBOs and NGOs undertook various activities relating to water matters. At community level this included installing water tanks (Interviewee 5) and organizing the distribution of bottled water (Interviewee 1). NGOs also assisted communities with developing and installing groundwater infrastructure, employing hydrogeologists if needed to survey groundwater resources to assist with well location. A representative of one NGO talked of how they helped communities apply for funding from various sources, including government, for groundwater infrastructure and to help start up non-profit organizations to manage installation and use:

> We work with counties, water companies, districts, cities … we help communities form mutual CBOs. We help them file articles of incorporation with the State so they can get tax exempt status. We were struggling to help [a community] get funding, we had a phone call with the Governor's Office and then the Department of Water Resources. The latter made the call [for funding]. Now we figured it out we can do this. (Interviewee 5)

Some groups, such as those who worked with the predominantly Hispanic community in East Porterville, ran community education projects on water issues. This allowed these groups to encourage community members to engage with government and lobby for SGMA:

> We have a base of residents, we work with them, build relationships on issues like drinking water … we put a human face for legislators to see. (Interviewee 8)

These NGOs organized meetings between residents of these communities and State government representatives around the issue of water (Interviewees 1, 2, 4, 5, 8; NGO Community meeting in East Porterville, 2016). They provided transport to the State legislature and water boards, and trained community residents to lobby lawmakers and other officials (Interviewees 3, 8, NGO Community meeting in East Porterville), as well as supporting communities to speak out at local events such as the City Council meeting attended during fieldwork. NGOs addressed language issues by providing resources in Spanish (Interviewee 9). NGOs worked closely with each other and official bodies, and also organized other CBOs, facilitating the emergence of organizational ecologies (Interviewees 8, 13, 14). NGO activity extended to more strategic matters. One NGO representative talked of how their organization worked with State and regional bodies to advocate for policy change. This respondent's work involved identifying legislation to support or oppose, and also proposing legislation themselves (Interviewee 8).

NGOs and CBOs were thus found to play key roles, acting in spaces where governments or officialdom did not have the capacity to responsively intervene, or by mediating between communities and government. In many cases this was no insignificant task given the repeated references to distrust in government and entryism from the agricultural lobby. NGO and CBO work entailed responding to community needs (Interviewees 3, 8) and

being sensitive to community perceptions (Interviewee 13). These organizations moreover worked toward developing awareness of water issues among communities, and actively facilitated links between these communities and centres of calculation. The importance of links and networks extended to the level of the individual. During fieldwork at a community event, one respondent, who had pursued mains water installation in East Porterville, showed me his extensive collection of business cards (Interviewee 6), which he claimed to include prominent representatives of State government. He said that his collection was a powerful tool. He had been able to display this collection to officials who he felt had not taken him seriously or perceived him as obstructive. He saw this as a means of demonstrating the power of his networks, and thus his own standing.

6. Discussion

This article has considered to what extent SGMA is representative of a post-politicised or de-politicised order, or whether it represents a space of opportunity for a potentially transformative groundwater politics. SGMA is intended to run across a relatively well-specified time window, until 2042, when all groundwater sustainability goals are intended to be met (University of California Davis, 2021). Early instantiations of SGMA studied here resembled some aspects of a post-political hegemony given the reification of market-based commons management approaches and monitoring systems. SGMA also exhibited tendencies consistent with previous studies which support the 'recentralization through decentralization' thesis (Birkenholtz, 2009), in terms of how SGMA led State government to exert local pressure in the form of proposed limits for groundwater usage and water rate increases.

Fieldwork data traced the attempted translation of SGMA from written legislation into a sociomaterially manifest form of governance. Increased water rates were justified as necessary to invest in infrastructure brought about by SGMA demands, but the proposed limiting of groundwater volumes became a contentious issue. Such instances represented reconstructed but contested relations between centres of calculation and operation, whereby knowledge claims (e.g. groundwater usage by acre-foot, water pricing etc.) circulated from one space to another via reconfigured networks of human actors and non-human material resources (Jons, 2011). Projected groundwater usage limits and the justification of increased water rates came about through incipient sociomaterial assemblages encompassing the textual form of SGMA, State Government, material infrastructures, and the actions of Porterville City Council and associated authorities.

Far from foreclosing dissent however, SGMA and its implementation opened up opposition from local residents and the agricultural sector. Porterville City Council's proposed water rate increases raised notable criticism from some residents, while usage limits were locally opposed by farmers in and around Porterville as unrepresentative of the needs of agriculture, and regarded as the product of a distant and uninformed State legislature. The outspoken criticism of government suggested that links between centres of calculation and operation were vulnerable. This was further evident in expressed difficulties in monitoring groundwater supply and usage, and by weak local regulations on well-drilling.

While SGMA faced opposition, NGOs and CBOs responded by pursuing alternative links between centres of calculation and operation. Some NGOs actively lobbied for

SGMA, while others pursued social capital through creating networks and shaping organizational ecologies. NGOs and CBOs helped to define the scale of the challenge of groundwater management by negotiating the boundaries of political space. By transporting community representatives to meet State Government officials, county boundaries were transcended, making issues geographically smaller. Lobbying for the connection of communities to mains water meant that NGOs and CBOs extended government authority, and the SGMA regime, to new areas, but in ways which benefited communities.

Groundwater governance thus created space for renewed agency on the part of NGOs and CBOs. These organizations were able to transcend and re-shape political and social boundaries by facilitating links between authorities and marginalized groups. NGOs and CBOs reflexively worked within and around governmental authority rather than challenging its structures from the outside. They sought to connect communities to governmental programmes, but also challenged sources of opposition to SGMA which existed both outside and within governmental structures. By widening participation in groundwater management, these organisations shaped the potential direction of SGMA implementation through pursuing their own emergent sociomaterial arrangements. The sociomateriality at the heart of this negotiation with power extended all the way to the level of the individual, exemplified by the respondent who used his collection of business cards to signify his embeddedness in powerful networks to hitherto sceptical authority figures.

At times, NGOs and CBOs operated in spaces opened up by the perceived sluggishness or bureaucracy of government, building support and trust in communities. NGOs and CBOs intervened in communities by providing basic amenities such as bottled water, as well as direct technical assistance with groundwater infrastructure, such as well drilling and the provision of water tanks during the drought. These organizations had to strike a balance between helping to embed communities into wider assemblages while also recognizing their autonomy and reluctance to engage with officialdom. NGOs and CBOs had the agency to be selective in terms of how they engaged with authorities. They sometimes used their positions to align themselves with authority, while at other times they exploited the lack of capacity or inability of government to intervene. By traversing social boundaries, these organizations selectively accessed governmental networks but used their autonomy and privileged access to communities to re-shape groundwater assemblages.

The activities of NGOs and CBOs helped to enrich debate around groundwater cultures. They opened up space for critique concerning who participated in groundwater governance and how. While some aspects of SGMA may seem commensurate with either a post-political order or a recentralizing groundwater governmentality, NGOs and CBOs recast SGMA both in their own image and that of isolated or marginalized communities. It remains to be seen how attitudes to groundwater will evolve in California, but it may be that SGMA has sufficed to begin to introduce new networks of communication and decision-making (Anderson et al., 2016).

Historically, a libertarian or individualist tradition has predominated in California, which has informed how water rights were perceived and legislated for (Leahy, 2016; Samuels, 2016), similar to other parts of the USA such as Montana (Anderson et al., 2016; Ward et al., 2017). Central Californian NGOs and CBOs struggled to facilitate more inclusivity and representation in groundwater management initiatives, in the

face of lobbying by the powerful agricultural sector and the representation of the latter's interests in government, in addition to top-down approaches to groundwater governance. Elsewhere however, this study found signs of an emerging, contending communitarian perspective on groundwater. Fieldwork identified acceptance of increased water rates for the communal good and water being valued in terms of health, well-being and its role in maintaining community ties, amid some signs of an emergent sense of shared responsibility for groundwater management. Hence a sense of liminality between two distinct ideological visions of groundwater could be discerned, manifested in sociomaterial terms by how actors responded to measures such as rate increases and usage limits, the participation of communities in groundwater management and campaigns to connect communities to mains water as in the case of East Porterville. NGOs and CBOs were able to negotiate this liminal space.

This article thus suggests that boundary organizations can be significant vehicles to contest both obdurate attitudes and incipient post-political hegemonies. SGMA may initially appear a post-political phenomenon, but through boundary organizations there was scope to pursue cultural change by reconfiguring sociomaterial arrangements, albeit in the face of powerful entrenched interests. This study suggests a need to challenge the idea of post-politics as ready-made and to think more carefully in empirical terms about how it emerges, and how it may be challenged. This article proposes that it may be more fruitful to think in terms of potential proper politics. Thinking in terms of potentialities could focus on identifying and understanding the underlying sociomaterial conditions that could lead to transformation. Doing so may illuminate new understanding of how post-political orders may be critiqued, and help clarify what properly political responses might look like. It is suggested here that the structures and institutions critiqued by post-political theorists may be more fruitfully regarded as sociomaterial assemblages within which there may lie potential for transformative reconfiguration. It is important however for researchers to keep an open mind regarding which actors might have the agency to engage in potentially transformative proper politics, and how they exercise that agency. In this study boundary organizations faced both sceptical citizens and powerful actors who supported the libertarian status quo, but they were able to determine their own strategies for engaging with authority. They were not forced to conform to a rigid order at risk of being ostracised. Instead they were able to strategically and selectively engage with government and communities to pursue alternative sociomaterial arrangements. The existence or formation of boundary organizations may therefore be a condition of possibility for socially just and transformative properly political assemblages to be pursued in spaces such as Central California.

Acknowledgments

I wish to thank the Institute of Hazard, Risk and Resilience at Durham University for providing funding which supported this research. I would also like to thank the Editor-in-Chief of this journal for his feedback which helped to improve this article.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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