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Assemblage-democracy: Reconceptualising democracy through material resource governance

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Assemblage-democracy: Reconceptualising democracy through material resource governance

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A B S T R A C T

This article furthers political geographic thinking on democracy by generating and employing a conceptualisation of 'assemblage-democracy'. Bringing an assemblage perspective to democratic thinking brings to the fore three key dimensions: the co-constitution of material and non-material connections; connectivity and associations, in particular engagement with multiple heterogeneous 'minoritarian' publics; and the (re)construction of spatial configurations such as scale. We employ these three dimensions of materiality, publics, and scale, in combination with the concept of (de)territorialisation to produce a geographic conceptualisation of democracy as emergent, precarious, and plural.

We operationalise and refine the concept of assemblage-democracy through an empirical analysis of democratic experiments with energy resources. Specifically, we analyse negotiations involved in emergent democratic energy experiments through in-depth qualitative empirical study of community-owned energy projects in the UK, asking what kind of democracy emerges with new technologies and how? In answering this question, we demonstrate the fragile, contingent, and contested nature of democratic practices and connections produced in the (re)enactment of energy infrastructures. In doing so, this article also shows how an assemblage lens can offer a renewed understanding of how democratic politics is configured through material resource governance.

1. Introduction

Across Europe and North America there is concern that existing democratic institutions are in a period of crisis. The norms and functions of representative democracy are being challenged from different quarters, accompanying a longer-term trend for democratic institutions to cede control of essential infrastructures to private interests, such as housing, energy, food, and water (see e.g. Marston & Mitchell, 2004, chap. 5). In this context, critique is not limited to the ability of existing political institutions to effectively and fairly govern the complexities of contemporary life: there are also demands for materially-based forms of democracy, centred on ownership and control of these fundamental societal resources.

The focus of our article is one such movement for material resource democracy. An activist movement for 'energy democracy' has emerged in recent years, with a growing accompanying academic literature, emphasising need for low-carbon energy transitions that are also democratic and just. It embraces "a vision of more distributed, locally based energy systems with a regionally appropriate mix of different renewable sources" (Stephens, 2019, p. 4). Energy democracy literature (for example, Stephens, 2019; Szulecki, 2018; Van Veelen, 2018) has made important contributions, demonstrating opportunities for political change created through technological change, and providing legitimacy for alternative forms of energy ownership and control, while also critically analysing the challenges in enacting this supposed revivification of democratic governance.

However, it is not always clear what makes such a system *democratic*. Energy democracy literature and practice often considers particular organisational forms (for example, cooperatives) and institutionalised decision-making processes (such as one member, one vote) to be inherently democratic. Such conceptualisations underplay the messiness of enacting democratic practices (Van Veelen, 2018) and do not fully account for material underpinnings of emergent democratic experiments rooted in transformation of energy production, distribution and consumption practices. Here, we argue that the question of how renewable energy technologies gain the capacity to act, and in turn configure democratic processes, warrants greater attention. Rather than ask how new energy technologies can contribute to 'more democracy'

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(Szulecki, 2018), we ask, what kind of democracy emerges with new technologies and how?

We therefore use on-going experiments in energy systems as an empirical lens to develop a conceptualisation of democracy beyond its institutional characteristics. In doing so we turn to the concept of assemblage to understand the organisation of projects, systems, groups, events, movements, society (and so on), focusing on how assemblage-thinking might help enhance existing understandings of democracy both within the field of energy democracy and wider debates about democratic theory and practice.

This conceptualisation, which we label assemblage-democracy, seeks to highlight implications for democratic thinking of an assemblage-based approach. We draw from Science and Technology Studies (STS)-inflected conceptualisations of assemblage but with reference to concepts first advanced by Deleuze and Guatarri, particularly the notion of territorialisation, to develop our analytical approach. We also emphasise the need to better account for questions regarding materiality, publics, and scale in a multifaceted approach to assemblage-democracy. We therefore connect to related work on the interrelations of materiality, technology and politics (Barry; 2002; Mitchell, 2011), but also move beyond these works offering a more focused, spatially sensitive excavation of the concept of democracy.

We argue that adopting an assemblage lens can produce alternative geographic sensitivities to conceptualisations of democracy that seek to understand democracy beyond its institutional characteristics. Geographers have long demonstrated the importance of geographic perspectives on democratic thinking (e.g. Barnett and Low, 2004; Mitchell, 1995; Staeheli, 2010). Exploring the enactment and formation of democracy, citizenship and publics beyond the nation state, this research has highlighted how material space is central to expressions of, and contestations over, democracy. STS-inflected approaches to assemblage can bring new insights to this tradition, through greater emphasis on co-constitution of material and non-material connections; connectivity and associations, in particular engagement with multiple heterogeneous publics; and (re)construction of spatial configurations such as scale. Our conceptualisation of assemblage-democracy thus sees democracy as an emergent and on-going struggle.

We operationalise our conceptualisation as a theoretical frame for understanding resource governance processes through in-depth empirical study of community energy projects in England and Scotland. In doing so we show how our conceptualisation provides a contingent, emergent and materially-oriented understanding of democratic experiments-in-action, while also making a specific contribution to the growing field of work on energy democracy and energy transitions more broadly by seeking to pluralise how connections between energy and democracy can be conceptualised and investigated.

2. Key tenets of assemblage-democracy

While our focus is on the application of assemblage thinking for understanding democracy, it remains important to briefly set out some central facets of assemblage to foreground our discussion (for fuller reviews of assemblage applications in geography, see McFarlane, 2011; Müller, 2015). The appeal of assemblage is wide-ranging but in its simplest guise the term has provided a helpful shorthand for the multiplicitous nature of phenomena, and their construction through connections of material and non-material elements. From an assemblage perspective, artefacts, relations and places cannot be understood as discrete wholes, but "as a multiplicity of processes of becoming, affixing sociotechnical networks, hybrid collectives and alternative topologies" (Farias 2009: 2 in McFarlane, 2011); or more simply "the holding together of heterogeneous elements" (Deleuze & Guattari, 1980, p. 357). This also has implications for understanding agency as distributed across actors rather than centred on individuals. Such thinking allows us to capture, "indeterminancy, emergence, becoming, processuality, turbulence and the sociomateriality of phenomena" (McFarlane, 2011, p.

206). [1]

To begin, we outline two critical facets of our conceptualisation, which form the basis of our analytical approach to understanding democratic experiments:

1. Democracy as emergent, precarious and contested, rooted in the desire to *deterritorialise*: a loosening of ties that seek to bound or limit connections between different entities.
2. Democracy as plural, experimental and not 'captured' by specific institutional arrangements, instead requiring consideration of a *multifaceted approach* to understanding connections and emergence: in our account we emphasise materiality, publics, and scale.

Each of these tenets challenge some of the foundations of traditional democratic theories, and build on a body of work within STS that emphasises the framing of things or issues, in order to open up or close down space for contestation; and the importance of materiality in understanding democratic constructions.

2.1. Democracy as deterritorialisation

Central to our understanding of assemblage-democracy is that it is founded on the notion of becoming-democratic (Deleuze & Guattari, 1980; for a more in-depth exposition on Gilles Deleuze's relationship with the concept of democracy, see Patton, 2005), in tune with a broader understanding of assemblages as characterised by emergence and on-going processes of construction. We find this concept of (de)territorialisation helpful to talk about the properties of assemblages. It can help shine light on (a) production of connections, and importantly (b) the nature of those connections, which are at the heart of our understanding of becoming-democratic.

Territorialisation refers to the relative flexibility, durability and porosity of an assemblage's boundaries, as well as relative homogeneity of its component parts. The degree of territorialisation, we argue, is a fundamental tenet of its democratic properties in two ways. First, a process of deterritorialisation is required for a 'thing' to become open to political contestation, through which new connections are produced. This initial openness, the need for something to become political, is central to thinking on democracy by various STS scholars. For instance, Latour (2005) proposes the concept Dingpolitik. For Latour, in democratic scholarship questions about what matters have too often been overlooked in consideration of how decisions about 'legitimate' matters should be made. The etymology of the German word ding uncovers a meaning as both 'thing' and 'dispute' or 'gathering'. Latour argues that the object of concern (or 'the thing') is what brings people together in democratic arenas ('the gathering'). Along similar lines, the idea of technical democracy (Callon et al., 2001) focuses on opening-up 'matters of fact' (Latour, 2005) beyond the technocratic sphere, to a range of expert and non-expert interests. This, as Barry (2002) argues, requires attention to the specificity through which politics is enacted: rather than seeing everything as political, it requires us to ask how things become a political matter – open to contestation and disagreement (or alternatively closed-down through anti-political acts). In the energy sphere, this means asking how energy becomes an issue for discussion, and what social and political relations are contested in doing so: as Cederlöf (2019) reminds us, we should not take for granted that energy is a resource to be governed, but question how it has come to be so and with what effect.

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[1] At this point we should also briefly note that we apply an understanding of assemblage as being applicable to all forms of phenomena rather than being a particular form of construction (see DeLanda, 2016 for a detailed treatment of this): the idea of assemblage from this perspective is less about what emerges than how we understand its construction, maintenance and emergent properties.

Dingpolitik, technical democracy and the political/anti-political frame all provide useful ways of thinking about politics by directing focus to how spaces for contestation between different interests emerge. But this leaves the question of how such spaces can be constructed democratically: returning to Barry (2002), even if a 'thing' is made political, it can still have anti-political effects if the subsequent space that emerges is undemocratic. This is thus the second way that the degree of territorialisation shapes an assemblage's democratic properties. Deterritorialisation can be understood as a process of promoting flexibility, openness, porosity and heterogeneity, which is central to our understanding of democracy. As such, the process of becoming-democratic is built on contingent foundations, which are plural, temporary, and reversible.

The concept of becoming-minoritarian (Deleuze & Guattari, 1980) might give us some further guidance for thinking about deterritorialising emergent relations. Any application of assemblage necessarily includes understanding that assemblages are defined by connections between individual components and how they collectively produce an emergent phenomenon. From a democratic perspective, connections between elements must also be open and flexible (Purcell, 2013) and there must be recognition of difference, resisting any attempts to standardise (Patton, 2005). Becoming-minoritarian takes us beyond ensuring only that different interests are represented, to denying the right of any individual, group, set of interests or practices to assume hegemonic status at any point. Democracy must therefore require fundamental recognition and promotion of difference-among-equals, as Latour (2005) and Barry (2002) also imply. Finally, again linking to Latour (op. cit.), becoming-minoritarian means considering 'who counts': which publics matter and are allowed a say in decisions, controversies and so on (Patton, 2005): we pick this up again in the next section.

But starting from a position of distributed agency and heterogeneous associations, while also aiming for some degree of solidarity and consistency (in order to achieve particular goals), creates challenges for considering what assemblage-democracy looks like in practice. How can democratic practices be 'imposed' on a contingent, emergent entity that is grappling to 'pacify' (Caliskan & Callon, 2010) such an array of potentially conflicting elements and actors? And is it possible to employ 'rules' for democratic organisation and engagement on a heterogeneous array of associations? Scholars drawing on Deleuze and Guatarri's work emphasise that the answer is not to set out codes of conduct or rules of engagement, but to recognise that "[i]n principle, there will be as many ways of becoming-democratic as there are elements of the concept of democracy" (Patton, 2005, p. 10; see also Purcell, 2013). Becoming-democratic, then, is a pragmatic endeavour, continually tinkering with and challenging established ways of being and doing, and learning through experimentation, rather than expectation of once-and-for-all transformative revolution (van Wezemael, 2008).

This approach to democracy implies that the nature of ties between elements is critical: they must be sufficiently loose or weak to allow for difference and even conflict between elements; sufficiently flexible that such conflicts do not cause the assemblage to collapse; and sufficiently open to allow new connections to be made in a continuing search to increase diversity of actors within an assemblage. But emphasis on weak and non-binding ties highlights the precarity of assemblage-democracy. Assemblage-democracy is not simply a collection of things working collectively, but a contested and precarious achievement that can untangle at any time (Graham, 2010, chap. 1).

As assemblages are never in stasis, our analytical focus is not just the extent of territorialisation in an assemblage, but on negotiations and conflicts between co-constitutive processes of deterritorialisation and reterritorialisation. By implication democratic experiments involve processes of deterritorialisation: promoting mobility, removal of fixed ideas and habits, with concomitant emphasis on continual remaking of connections. Deterritorialised networks, "require their members to be more active in the maintenance of links to invent new forms of communal participation, given that connections will tend to be wider and weaker and that ready-made rituals for the expression of solidarity may not be available" (Purcell, 2013, p. 30). Moments of deterritorialisation are therefore moments of possibility, when new ways of doing and being can be invented. But processes of deterritorialisation are not without risks, including always immanent potential to be 'captured' by territorialising forces, and in our analysis below we highlight interplay between deterritorialisation and reterritorialisation in all actions taken in construction of emerging assemblages.

Having set out how we think the concept of territorialisation can complement STS approaches to the political to provide an analytical approach for the concept of democracy (as something distinct from 'the political'), we now return to more established STS ground in thinking through different interrelated components, or territorialisation loops as we call them, that are at work in assemblage-democracy.

2.2. Recursive loops of democratic relations

Rather than focus on institutions or spaces of democracy, we instead draw attention to key aspects of how democracy-*as*-deterritorialisation can be approached conceptually and empirically. In doing so we consider the recursive relations between three territorialisation 'loops' that democratic experiments must grapple with. We use the term loops in reference to Latour's (1999) 'circulatory system of scientific facts', where he outlines different simultaneous activities, each of which feeds back into itself as well as influencing other activities. The 'core' of these loops is understood as the points where these activities link together, rather than being something that stands on its own, independent of social-material conditions. To us this way of conceptualising different interlinked facets of an emerging assemblage is useful.

The territorialisation loops we identify concern relations between arrangements of matter, publics and spatial constructs. This resonates with Latour (2005) and Marres' (2007) interest in how publics are constructed in relation to matters of concern and vice versa. When viewing democracy as a process of deterritorialisation this also brings focus on the kinds of spatial constructs that shape how matter and publics are constructed (and vice versa). The term territory of course invokes spatial imagery but the concern for (un)bounding and removal of hierarchies also means paying attention to how spatial relations are produced. We see these three facets as critical to a fully-fledged conceptualisation of assemblage-democracy, emphasising how these can be arranged to produce different configurations, opportunities and challenges for becoming-democratic.

In our account below we begin with the matter of assemblage-democracy: how material and non-material elements come together to produce things, which in turn produce territorial tendencies or dispositions. Matter takes shape partly through the interests of different parties or publics, which also prompts emergence of other publics, in turn also generating new connections between publics. This does not necessarily happen in sequence and we want to be clear that publics are important in constructing matter. The domain of publics is where we might traditionally think of the democratic sphere but in our conceptualisation how they relate to matter (and vice versa) is particularly important, as is also set out by Marres and others (see below). Matter-oriented publics and publicly-oriented matter are also embroiled with spatial relations which shape and are shaped by spatial constructs, which we consider in our third loop: spatial organisation and influence. We focus in particular on production, disruption or dismantling of scalar hierarchies. Again, we do not see this as a sequential process – more an interrelated set of constructions - instead thinking about how matter, publics and spatial constructions combine in an emergent democratic assemblage (Fig. 1). We explore the importance of each loop next.

2.3. Assemblage-democracy and matter

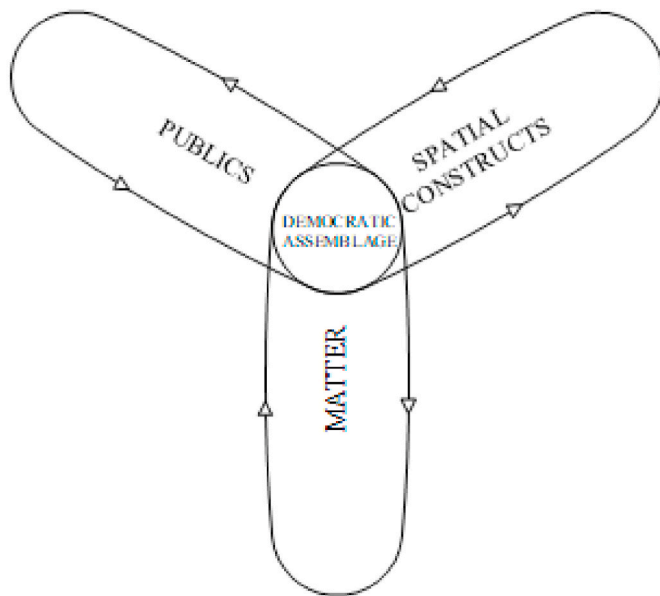The first loop we consider is 'matter'. As we began to set out above,

Fig. 1. Recursive loops in a democratic assemblage.

work in STS (Marres, 2012; Ryghaug et al., 2018) has begun to show how a material perspective on participation offers an alternative to modernist and liberal interpretations of a public *demos* that cannot be free if ruled by technical experience and expert knowledge (Jhagroe & Loorbach, 2015). Instead, taking matter seriously does not position democracy against technocracy, but interrogates how diverse interactions between people and matter can be constituted in ways that contribute to becoming-democratic (see also Chilvers & Longhurst, 2016).

A material perspective contrasts with historical conceptualisations of democracy. For example, Aristotle argued that democratic participation should be restricted to people not "too much involved in the world of things" (Pocock, 1998: 34 in Marres & Lezaun, 2011). And despite calls for thinking beyond existing paradigms of democratic institutions and deliberative democracy (Mitchell, 1995; Schlosberg & Coles, 2016), these conceptions have continued to dominate literature on resource governance as well as wider social analysis. In contrast, a material perspective can help further understanding of how democracy is constructed, performed, and its effects. Assemblage-democracy necessitates thinking beyond human action to "socio-material interminglings … ways of articulating the elements of the world and their mutual connections" (Farias, 2011, p. 371). This orientation provides opportunity to redefine democracy towards new kinds of participatory practice, recognising objects, natures and nonhumans as political actors.

Focus on materiality also enables investigation of how things acquire capacities to organise publics (Marres, 2012). In other words, it allows consideration of "the material constitution of the subjects, spaces and issues of democracy" (Marres & Lezaun, 2011, p. 496), and also draws greater attention to how participatory objects are made (Marres, 2012; Marres & Lezaun, 2011). This is important to our understanding of assemblage-democracy: materials shape processes of becoming-democratic, but how they are arranged and deployed is central to their capacity to affect such processes (Latour, 2005). Their arrangement and deployment shape assemblages' disposition in relation to territorialisation and therefore (in our conceptualisation) democracy.

Processes of reassembling sociotechnical worlds produce vulnerabilities and opportunities for alternatives to emerge (also see Mitchell, 2011, p. 241), which also re-emphasises contingency. This has implications for democratic participation: if democracy is not found in a rarefied strata 'beyond things' and is instead configured through socio-material entanglements, then publics and public participants are also "inevitably caught up in dynamics of technological change" (*ibid.*

p499), and as such are inevitably unstable and open to changing materialities. This final point takes us to questions about emergence of publics in an emerging assemblage, the second loop in our conception of assemblage-democracy.

2.4. Assemblage-democracy and publics

In our approach to assemblage-democracy, publics emerge in relation to the construction of matter: the socio-material thing becomes a 'matter of concern' for different interests. The emergence of publics overlaps with and entwines with development of an initial project or idea.

The constitution of publics is critical for studies of democracy. First, what do we mean by a public? In political theory, there is an underlying assumption that the public "can be understood as an entity, which *should* make itself manifest in a democratic society" (Barry, 2013, p. 97). Assemblage-democracy rejects essentialist claims of what publics consist of and what they should be concerned with. Rather, an assemblage lens encourages thinking about publics as emergent, co-constituted through their enrolment in the assemblage (see also Barry, 2013; Chilvers & Longhurst, 2016). Becoming-democratic means publics emerge through making meaningful connections, and the aim should be to continually extend the number of such connections (Purcell, 2013). These connections must be allowed to flow in both directions and be consensual. They are also generally non-binding, requiring continual re-establishment. This means resultant publics should be broad-based, heterogeneous, inclusive and based on equality (Patton, 2005). From this perspective becoming-democratic thus implies deterritorialisation of publics.

We follow Marres and Lezaun (2011), Chilvers and Longhurst (2016) and Ryghaug et al. (2018) in understanding democratic publics as infused with material settings, devices and objects. As a new thing is constructed, especially one which is unfamiliar or different to what has previously been the norm, it generates interest or controversy among those who might be affected by its development. This is an issue-oriented (Marres, 2007) politics, following a Deweyian notion of publics and democracy (*ibid.*). This understanding includes how things shape public participation (subjects, spaces, tools of engagement) but also how they come to possess the capacity to engage and how 'power of engagement' might be mobilised and contested. As well as foregrounding materiality it has implications for thinking about where participation takes place. If participation is at least partly a material act, it brings added focus on everyday engagement with objects, devices, settings (and so on), rather than expecting politics to take place in dedicated 'political locations'.

Focusing on materiality in conceptualising democratic publics means highlighting entanglements of participation. Yet, as Marres and Lezaun (2011: 500) note, producing alternative democratic activities is inherently experimental and "require[s] precise forms of separation and extrication". In our example decentralised energy systems create some possibilities for this – and our empirical investigation below shows both the possibilities and limits to separation, including contradictions inherent in processes of extrication to become-democratic. Extrication involves disconnecting from some associations, potentially to create new, less territorialised associations, but also with the risk of simply reproducing existing or creating new territorialities. There is therefore a balancing act to maintaining points of connection and communication between assemblages and their elements and ensuring that difference can flourish, while also organising to achieve collective aims and ambitions. Pragmatically, democratic assemblages will also continue to connect with the wider context in which they are situated. This means engaging with homogenising sets of standards and ideals; and potentially even adopting these to function. Such negotiations or conflicts remain central to assemblage-democracy, reflecting the entanglement of de-territorialisation and re-territorialisation.

As publics emerge through new connections, and ways of inclusion and exclusion are produced (and materially mediated) these processes of

negotiation and conflict also mediate levels of territorialisation within an emergent assemblage beyond (although shaped by) its initial socio-material disposition. As negotiations and conflicts over inclusion and exclusion of different publics take place the third loop comes into view: questions about spatial organisation and hierarchy. This forms the final loop within our geographically-sensitive concept of assemblage-democracy.

2.5. Assemblage–democracy and spatial constructs

To recap, the construction of a socio-material thing produces disposition towards a level of territorialisation. The territorialisation of this construction is mediated by relations with and between different publics that emerge and participate within the assemblage. Territorialisation is also shaped by spatial relations, including how assemblages geographically organise activities and interact with spatial arrangements such as scalar hierarchies. Questions about spatial organisation and limits are central to important questions about democracy: for example, questions abound about limits to genuine participation over space and/or between increasing numbers of participants and the construction of scalar hierarchies for decision-making.

Following the focus on construction and emergence, it is helpful to consider further how spatial constructs such as scalar hierarchies are constructed and the implications this has for democracy. From an assemblage point of view, one key question is: how does one assemblage come to be perceived as subsumed within or subordinate to another? This question relates to a long tradition of scholarship focusing on construction of scale. Indeed, as Anderson and McFarlane (2011: 124) note:

"… we could understand the contemporary enthusiasm for assemblage theory as a response to ambivalence toward the a priori reduction of social-spatial relations and processes to any fixed form or set of fixed forms."

We do however insist that matter is important to the construction and deployment of scale, which is less well articulated in existing scalar literature. If democratic assemblages are rooted in materiality, which in turn affects how we think about publics and participation, this then raises questions about how we think about decision-making as a scalar activity. Scalar configurations are regularly invoked when thinking about existing formal democratic regimes: the role of the 'nation state', 'local authorities' and so on. Assemblage-democracy means rethinking both 'where' we look for democracy and how we consider scalar configurations in relation to this. Materiality is central: scalar constructions are generated and maintained through socio-material arrangements, from technologies of governance to organisation of material infrastructures such as energy systems (see also Bouzarovski & Haarstad, 2019). Assemblage-democracy takes us beyond institutional understandings of democracy and material dimensions of this invites consideration of reconfiguration of material objects and systems in understanding scalar dimensions of democratic experiments. From an assemblage-democracy perspective we see two particularly pertinent points regarding scale:

1 If scalar constructions imply particular forms of control and territorialisation, assemblage-democracy implies that democratic experiments should seek to deterritorialise these constructs; or in the words of Marston et al. (2005: 420): "expose and denaturalize scale's discursive power". Material reconfiguration of such constructs is critical to this denaturalisation.
2 We argued above that assemblage-democracy requires connection and engagement with wider systems or contexts: in geographic terms this means engaging with 'higher' scalar constructs in order to effect change or create conditions for different forms of social organisation. This does not reify the existence of different scales but instead

recognises the politics of scale as an "epistemological fact" (McFarlane, 2009, p. 564).

Across these themes there is repetition of deterritorialisation (deconstructing scale) and reterritorialisation (making use of or engaging with existing scalar constructs).

Overall, our conception of assemblage-democracy provides tools to interrogate democratic experiments, through focus on becoming and (de)territorialisation across a triadic geographic conception of how democratic experiments are constructed. We take this analytical conceptualisation forward through empirical investigation below.

3. (De)territorialising energy systems through community-led democratic experiments

Our empirical focus is on energy projects owned by community groups in England and Scotland. As previously mentioned, community energy has often (although not exclusively) been identified as a route to achieving energy democracy both in activist and academic writing. However, while energy democracy proponents often view 'community energy' as an opportunity for establishing truly popular or progressive forms of energy governance, others are more cautious, noting deep entanglements between community groups, the state and private sector (Creamer et al., 2018). Focusing on community energy allows more thorough conceptualisation of what 'democracy' in energy democracy means, through challenging notions that such projects are inherently democratic, instead tracing projects' engagements with the process of becoming-democratic and challenges encountered through this. As such, it also serves as a lens for testing and refining our conceptual apparatus with consideration for wider application to democratic theory.

The data presented here was gathered through two complementary research projects concerned with emergence of new forms of energy governance in England and Scotland, focusing on democratic potential of such forms of governance. While our data speaks to two geographical locations, our intention is not to offer a direct comparison between the two, nor to use them as illustrations of a more general process. Rather, we see the community energy initiatives we looked at as emergent sites of action, constituted through both specificities and interconnections. In our quest to understand *how* these projects and their democratic qualities are constituted, we thus follow Hart's (2018) call to use a comparative approach to illuminate processes of constitution, connection, and disconnection – which are central in our conceptual approach.

To capture the diversity of community energy initiatives and the processes of their constitution and sustenance, both research projects adopted a broad approach to sampling, engaging with 24 community groups (15 in Scotland and 9 in England). In total, we conducted 87 in-depth interviews. Approximately two-thirds of these interviews were conducted with community energy groups between 2013 and 2018. The remainder were conducted with state, voluntary and private sector organisations active in the community energy sphere (mostly through supporting community groups), and which were identified through social network analysis of the community energy sector. Documentary analysis of national and local policy documents, planning applications, news reports and community groups' websites supplement the interview data.

The interviews were semi-structured, conducted face-to-face or by telephone, and were recorded, transcribed, and subsequently coded according to themes relating to governance and democracy. For this article the data was reanalysed and recoded, focusing on processes of deterritorialisation and reterritorialisation under themes of materiality, publics, and scale. Our analysis below takes these themes, building up our analysis of how territorialisation loops entwine. Table 1 sets out some of the key points of analysis in each domain. Finally, although conventions of academic writing dictate a linear structure it is important to note that analysis was conducted iteratively, moving back and forth between theory and empirics. This is important because we do not want

Table 1

Processes of (de)territorialisation in our study of community energy projects in England and Scotlan

Recursive loop	Material concerns	Negotiating connections	Territorial implications
Matter	Energy systems depend on the arrangement and deployment of an array of material technologies for energy production, distribution and use.	The material layout of energy systems produces more or less binding connections to existing ways of acting	Community-led decentralised energy production open-up possibilities for deterritorialisation through producing a more heterogeneous energy system. These socio-material arrangements shape the territorial disposition of community energy projects
Publics	The deployment of different technologies creates connections with different emergent human and non-human publics enrolled in community energy projects.	The emergence of publics can be a process of enrolment and connection to projects but publics can also generate conflict. Decisions by projects and their situation within wider socio-material assemblages have implications for inclusion and exclusion of different projects.	Community energy projects face trade-offs over inclusion and exclusion of publics as they emerge, with implications for levels of deterritorialisatoin. Deterritorialising assemblages also face challenges when they come into conflict with more territorialised entities which can more easily mobilise resources and exercise more direct forms of power.
Spatial relations	Decentralised energy technologies deployed by community groups can potentially re-scale towards more locally-oriented arrangements or de-scale energy systems towards a more topological network of nodes.	Projects make decisions about whether to extend connections through wider geographic reach or bound activities to a place. Community energy projects are situated within existing scalar constructions and need to find strategies to operate within those constructions.	De-scaling can be a process of deterritorialisation, removing hierarchy and unbinding territorialised connections. Individual projects, however, usually focus on a specific place (reterritorialising) but often with an allied goal of creating space for others to act in other places (deterritorialising) In practice community energy projects are bound by territorialised scalar constructs, but also seek to make strategic use of them to overcome resource imbalances.

to imply that our empirical findings were used purely illustratively to fit to a predetermined analytical understanding: findings are to some degree co-constitutive of the analytical approach. In particular analysis of our empirical material was important to shaping and refining how we thought about the different loops important in constructing democratic assemblages, which we then further developed in conversation with existing literature around 'matter', 'publics' and 'scale' (and the relations between these elements).

3.1. Matter and deterritorialising energy systems

Matter emerged in our fieldwork as central to ambitions for more democratic energy systems through establishment of community ownership and/or control over (aspects of) energy systems. While others have argued democratising energy requires that "all persons involved or affected must have a chance to collectively and directly take part in decision-making in the production and supply of energy" (Haas & Sander, 2016, p. 137), from an assemblage-democracy perspective we are particularly interested in understanding how material settings, devices and tools are put to use to support or hinder deterritorialising processes and thus shape processes of becoming-democratic. Our fieldwork demonstrated that materials produced powerful path-dependences that locked-in particular ways of being and doing as well as creating new possibilities for change. Importantly, capacity of materials to act – to shape processes of becoming-democratic – was shown as contingent on how they are assembled, positioned within different assemblages, and deployed.

Respondents in each case study project made statements about projects' potential to reconfigure energy systems and to decentralises ownership and decision-making. Respondents aimed to deterritorialise (and therefore democratise) energy systems by opening to a wider array of heterogeneous actors, who in turn could influence the nature of energy assemblages:

> We set out to make energy a bit more, bring it a bit more into the hands of local people, produce it locally, own it locally, benefit from it locally. I guess it's a piece of the puzzle in … basically empowering people to make decisions about how they use electricity. (Community Energy Practitioner, England)

This reconfiguration is inherently socio-material, where possibilities for decentralised generation go along with greater possibilities for decentralised ownership and control. In our cases these possibilities also

meant energy was re-politicised, with potential reconfiguration of the energy grid constituting energy no longer as an invisible technocratic issue, but an issue of democratic participation. While developments in technology have made these changes possible, existing material conditions (such as the nature of the existing energy grid) limited potential transformative change.

The material organisation of the UK energy system produces important elements of its disposition towards centralised operation, with energy producers traditionally feeding into a high voltage 'national' energy network, then feeding into local/regional distribution networks, in turn supplying buildings via another connection for consumption. The territorialised nature of the existing energy system produces powerful path dependencies that shape how new projects are organised, including how different material elements can be deployed. The incumbent energy system works as a material device to deploy a homogenised standard of large-scale, centralised production and top-down governance. Community energy provides potential to alter this disposition: projects literally rewire the topologies of system organisation to potentially democratise through greater scope for different actors to directly control aspects of energy systems. But through – in most cases - necessary engagement with the grid, projects can be limited in their ability to do so.

Grid limitations are prevalent constraints across community energy projects and were regularly raised as a limiting factor in project development across our case studies in both England and Scotland, where many projects seek to supply energy to the national grid, rather than through a mini local grid. Inflexibility of the existing grid shows how energy systems have been materially territorialised in favour of incumbent actors, with barriers to entry for new and different types of energy producer. Rural areas are particularly affected, and in some cases communities essentially compete for grid connection. In those cases, a community energy practitioner explained, one successful community project might foreclose that option for another community.

From a democratic perspective, it is the arrangement of materials to produce ties for those that want to access or make use of the energy system that is important. Invoking Allen (2005), our case studies show how material arrangement of the energy system produces a system of domination over those that wish to gain access: the nature of engagement is pre-determined, bounded and inscribed with strict protocols. It is, in other words highly territorialised and highly coded.

In this sense, democratic possibilities are constrained by the limits of existing territorialised, material, networks. Yet, existence of an

interconnnected grid across the UK, linked to international energy systems can also be delimiting. One community in rural Scotland had intended to build a wind turbine and a new, localised grid connection to supply a small number of local households with renewable energy. This is a more radical shift in material organisation of the energy system for those people but it also reterritorialises energy production to include just a small number of people rather than the near limitless number of households reached through the national grid. We return here to Marres and Lezaun's (2011) point that material mediations and reconfigurations can isolate as well as produce new constellations of action. An important question here though is the extent that different groups can influence how the grid operates: reterritorialisation towards a more homogenous and materially bounded system (the local microgrid proposal) opens up possibilities for different ways of experimenting with decision-making and control over resource, which is diluted when the national grid is introduced as an intermediating technology. Due to the various rules, regulations and market protocols inscribed within grid access, a community energy project that supplies electricity to the national grid has much less capacity to directly experiment in different ways of becoming-democratic. The capacity to act of a technology, such as a wind turbine, is thus altered by its relation to other nodes in the configuration – in this instance, the national electricity grid.

However, returning to the question of how materials gain capacity to act in different ways, our respondents explained that existence of a national or international grid does not have to be democratically limiting. It is the attendant rules and regulations defining its use that shape the grid's capacity to sustain new connections and sociomaterial configurations. These rules and regulations mean community projects seeking to supply the grid are bound to particular standards, regulations, pricing arrangements and so on, and inevitably relatively territorialised: it has to be designed in certain ways to function and to fit wider safety and design standards, use accepted financial calculations and arrangements in order to obtain funding for construction, and abide by market regulations and pricing agreements. These territorialising factors often mean engagement between (humans within) communities and the technology is limited and control over decisions for example to directly supply buildings, to alter energy tariffs or to introduce supply-side support for households experiencing energy poverty are also constrained.

Through exploring interaction between community energy projects and the national grid we can see how materiality fundamentally shapes the extent that experiments can and do de/reterritorialise systems. We must be careful not to overly imbue materialities with intrinsic capacities to act, however. The nature of ties between elements is critical. Technologies such as a national grid can have democratising capacities if deployed as enabling (deterritorialising) rather than controlling (territorialising) technologies; for example, as flexible rather than one-way systems. This highlights the need for understanding the interplay of deterritorialisation and reterritorialisation in becoming-democratic: our key point for this initial section is that materiality is critical to this interplay, but that the 'capacity to territorialise' is not inherent in materials but rather is a matter of their deployment in different contexts. We now move from these initial findings relating to the 'matter' loop in our conception of assemblage-democracy to introduce the interplay between the construction of matters and the construction of democratic publics within community energy projects, before introducing our third loop to consider how scale is constructed and deconstructed to reterritorialise energy systems.

3.2. Matter, publics and deterritorialising energy systems

Matter is not only an important factor in the forms of democratic engagement that become possible: it also shapes and is shaped by publics constituted through community energy projects. This entanglement of materiality and publics has implications for the democratic qualities of such projects from a deterritorialisation perspective (seeking ever-increasing numbers of flexible, non-binding connections with

heterogeneous publics). The constitution of publics can thus be understood to take place through the entangling of social and material actants that takes place through the assemblage-democracy.

There are various conditions that influence how materials obtain capacity to shape what publics may consist of. An obvious one is material conditions for technical feasibility. The deployment at a particular site in a particular context then impacts on which publics emerge. Searching for suitable deployment sites was challenging for most projects in our study, including trade-offs between desires to engage with underrepresented groups, and the need to find a suitable site to deliver the project. However, technologies do not simply become feasible as the result of material conditions: energy's role as a resource has also been shaped by changing government priorities. Early community energy projects in the UK often sought to self-supply electricity to local houses. The introduction of the Feed-in-Tariff[2] by the UK Government in 2010 changed this. Suddenly it became attractive to develop larger projects, supply energy to the national grid, and earn an income in return. Consecutive Feed-in-Tariff reductions later ensured that construction of new community projects adopting such a model all but halted. Instead, our research indicates a slow resurgence in projects seeking to enable direct use of energy produced, albeit often hampered by financial, logistical, and/or technological challenges.

These changes to configuration of community energy projects affects how they become intertwined with energy publics. One clear example can be found in the Scottish Highlands. Here, one community's initial plan for an energy project was aligned with long-standing organisational forms of communal governance, rooted in agricultural practices and landownership. In this instance, 'the community' seeking to develop an energy-generating project were members of the grazing committee - an existing form of local societal organisation, bound in a small area as defined by shared control over agricultural land ('common grazings'). This project was, however, overtaken by a second project initiated by a more recently established community group, representing a larger geographical area. These two projects had different material configurations, one a small wind turbine supplying local households directly through a local micro grid, the second a larger turbine supplying the national grid:

> When it was initially perceived it was a crofting[3] community doing something for crofters, not realising that crofters are only a small part of the community. There were an awful lot of disenfranchised members of the community saying 'but what about us?'. And they said 'oh no, this is for crofters'. It became a little bit of an us and them attitude. A number of us then said we should do it for the whole community. So there was one scheme for the crofters starting, one for the whole community starting. [...] At the same time the support mechanisms came in to play then. It was then said, you can have support, but if it's for the community. (Local resident, Scottish Highlands)

The 'support' refers to a trend in Scottish policy and government funding, which moved away from supporting older forms of community organising, such as grazing committees, to supporting communities of place, where everyone living in a defined geographical area is considered to be included in 'the community'. As such, we see not only a change to the material configuration of community energy projects and the form of engagement, but also *who* can engage. Here changes to the 'public' are tied up in both technological change and government priorities. It would be simplistic to see one type of configuration of publics as 'more democratic', rather, different options involve different trade-

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[2] Feed in Tariffs (FiTs) were available in the UK from 2010 to 2019. They provided a subsidy payment to small scale renewable electricity generators for each kWh produced, and additional payment for energy exported to the national grid.

[3] A crofter is a person who occupies and works a small agricultural unit known as a croft. Crofts are found in West and North Scotland.

offs between which publics were engaged (or emerge), how they could participate and benefits different publics receive from projects. In other words, each option involved processes of both territorialisation and deterritorialisation.

Furthermore, it is clear from our research that publics that emerge through their enrolment in an assemblage are often embedded within existing relational arrangements, which shape ability to foster new connections. Most actively enrolled in assemblages were often 'the usual suspects' of White, relatively wealthy, well-educated people who were either retired or were already environmentally active. While respondents were not necessarily concerned about this, in assemblage-democracy terms the establishment of connections to a wide variety of interests is essential to democratic change.

However, our understanding of publics as emergent and co-constituted also highlights how multiple publics can emerge and become enrolled in assemblages, possibly resulting in conflict. In our aforementioned case in rural Scotland where possibilities for two wind turbines had been explored, the turbines came to act as symbolic objects which produced conflict between publics, both within the local area, and through enrolment of other actors across the UK and abroad who opposed the proposal for a larger turbine on its alleged incompatibility with its situation in a perceived wild and natural landscape. In England, some community groups behind hydroelectric schemes found themselves dealing with another emergent public: anglers. Respondents spoke about the well-organised and influential lobbying power of this public:

> There's a lot of difficulties with the fishing community cos those that own the fishing rights are averse and it causes a lot of problems cos they're very concerned as to what impact any hydro might have on their ability to sell the fishing rights, the catch, and they have a big financial backing and legal teams that small community groups struggle with … (Community energy practitioner - England)

The heterogeneous connections produced through these experiments challenge other, established regimes and in turn incite (re)territorialising actions. It is important here to see how differential ability to mobilise resources can be critical. Groups embedded within existing regimes or systems, such as the angling lobby, can quickly mobilise resources and use existing systems more easily to their benefit. For deterritorialised assemblages, power is harder to exercise so directly and instead resources have to be drawn through the ability to produce mutually beneficial ties across a wide range of actors: resources are gained through diffuse actions of many actors to resist, disrupt or grow around territorialised structures.

Interplay between deterritorialising and territorialising forces can be important in development of democratic experiments and not necessarily a case of one tendency hindering the other: for instance, the role of wind turbines or hydroelectric schemes as controversial objects that stimulate debate and mobilisation of different interests is in some ways essential in creation and maintenance of heterogeneous connections in places. This promotes further deterritorialisation of energy systems through generating wider connections across different groups of people, beyond those who might directly be involved in or interested in community energy projects. But the flipside is that if one emergent public seeks to enforce its will on the emerging assemblage through mobilisation of territorialised resources it creates risks for the democratic experiment: the creation of associations in itself is not sufficient for deterritorialisation and indeed creation of associations might produce moments of territorialisation either from those attempting to 'protect' their experiment or those outwith. Democratic experiments will always involve trade-offs as they progress.

In this section we have seen how publics emerge and are enrolled into projects in varying ways, influenced by matter (and vice versa). The emergence of publics throws up questions about trade-offs between homogenisation and heterogeneity, between minoritarian and majoritarian interests. We have also raised the importance of resource imbalances and difficulties deterritorialising projects face against more territorialised entities: engaging with more territorialised publics, while pragmatically necessary, produces new trade-offs and risks for democratic experiments. The question of harnessing resources through democratic experiments takes us to our final empirical section, which explores how community energy projects in our study engaged with geographic scale to deterritorialise energy systems. In that section we explore in more detail different tactics to harness resources in, with and against embedded territorialised systems.

3.3. Materiality, publics, scale and (De)territorialising energy systems

In our consideration of assemblage-democracy above we asserted that more detailed treatment of scale was necessary to understand the full implications of assemblage-democracy from a geographic perspective. We now draw together our understanding of the varying dispositions of matter and consideration of power-inflected relations between assemblages/publics to explore how those relations are negotiated through spatial tactics and strategies.

The emergence of technologies and technical challenges (climate change, grid constraints and so on) has created opportunities to consider different ways of thinking about scalar hierarchies. Turning to our case studies, we found projects grappled with scalar issues in a variety of ways, often deliberating about territorialising and deterritorialising effects (albeit not using those terms) of their choices regarding scalar constructs. These usually related tangibly to engagement or otherwise of different (materially-mediated) publics, too. Respondents spoke about scale in two sets of negotiations: (1) within projects, deterritorialising scalar constructions through changing socio-material composition of energy systems, and reterritorialising scalar constructions through creation of new topographic boundaries and limits to action; and (2) across projects and interested parties, deterritorialising existing scalar constructions through creation of new, spatially distanciated topological networks, but reterritorialising scalar constructions through producing new hierarchies ('putting scale to use'). In both cases negotiations were entwined and not necessarily opposing forces.

Beginning with scale 'within' projects, respondents repeatedly claimed that an important rationale of projects was to rescale energy systems by localising energy flows as well as financial and material flows: "part of the model is try and keep everything locally, that goes back to trying to keep money locally as well" (Community Energy Practitioner, England). The aim was to deterritorialise the existing energy system through decentralisation, potentially extending beyond energy systems to the wider economy. But localisation goals also reterritorialise and create potential for new forms of exclusion through geographic bounding, homogenisation of elements and/or creation of new overarching standards (cf. Purcell & Brown, 2005). For example, in Scotland, the Scottish Government's requirement that 'the community' in community energy projects should be geographically-defined in order to access government support, codified emergent spatial relations. This potentially hampered emergence of alternative models for decentralised energy generation, including the cooperative model that has been popular in other Europe countries. Our participants also reflected on how a place-based approach also risks creation of new scalar hierarchies through use of geographic monikers portraying groups as 'the' community group for a locality. For this reason, some deliberately limited geographic scope to create space for others to act elsewhere:

> We cover [local authority area] cos we wanted, centred on the town where we started from, the transition town thing, start small and radiate out and join up with other projects elsewhere, so I think we saw ourselves as something bounded here but always willing to join up with others doing the same thing elsewhere (Community energy practitioner, England)

Here we see how bounding activities and ambitions to meet a

particular definition of 'local' is not necessarily a territorialising act: decisions about spatial limits were often framed as ensuring space and opportunities for others to act, while generating and maintaining new connections between those people and places. This takes us onto the second set of scalar dilemmas, relating to (de)territorialising across or between projects, focusing on a different set of strategies to harness resources in the face of embedded territorial hierarchies.

Generating weak connections to empower others rather than tighter connections to increase capacity of an individual assemblage chimes with our conception of democracy. We experienced throughout our research how projects valued the importance of supporting others through 'horizontal' networks of peer support, seeing it as essential to their mission. In this sense, they often resisted temptation to generate new spatial boundaries and hierarchies of action, and tended not to be overly territorially bounded in their connections. Instead they engaged with topological networks, often materially rooted – for example interest in a particular technology: *"I see myself as not connected in any way to just [region] or even nationally, many of the people I discuss things with are in Denmark"* (Community energy practitioner, England). The impacts of (material) communication and transport technologies allowed many projects to escape existing territorial-scalar constructions to further objectives and support others.

Yet existing financial-material-social relations also inevitably bounded some networks. While some respondents in our case studies in rural Scotland expressed desire to develop income-generating energy projects to become more independent from centres of governance (e.g. Edinburgh and London), they also relied on centrally-set energy subsidies and other support mechanisms for funding. Scalar hierarchies and attendant resource imbalances were used to gain greater independence from these hierarchies, but with risks of becoming tied into territorialised finance and reporting mechanisms (Taylor Aiken, 2016).

Staying with scalar hierarchies, rising prominence of community energy as a movement led to creation of national representative bodies: Community Energy England (CEE) and Community Energy Scotland (CES). As with dilemmas for individual projects, these created potential tensions around production of new scalar hierarchies. The national bodies were intended to act as a coordinated voice for the sector and provide new opportunities for projects to connect through using CEE or CES to share learning and material and through events like annual conferences. These bodies were also employed as a pragmatic use of existing scalar hierarchies to engage with central and devolved governments in a way that – it was felt – individual projects could not:

'Maybe in the past we would have done more responses to policy consultations or national conversations around energy and energy policy and community energy and tax relief and stuff like that, but they are our national membership body and we're happy they're there and doing what they're doing and by default, cos *there's no-one else calling themselves that, they've established themselves as a well-respected organisation, that they are the voice of community energy.'* (Community energy practitioner, England)

The quote above shows an emergent division of labour between individual projects and the 'national' body, a form of rescaling that might be understood as reterritorialising away from assemblage-democratic ideals but seen as necessary to ensure effective engagement with existing scalar divisions within political and energy system operations. In this sense, democratic experiments harnessed resources by working within existing territorial constructs to make the most of collective loose ties. This entails territorialisation of operations but was seen in our study as an acceptable trade-off to engage with existing ways of governing and organising energy systems.

Our analysis of scalar constructions builds from the previous two loops to show how in practice, projects sought to use territorialised constructs (such as scalar hierarchies) and impose geographic boundaries on activities as pragmatic means of achieving change within an inevitably 'impure' world. Beyond dealing with trade-offs as emphasised

in the publics section above, projects see value in some forms of territorialisation to achieve goals, including creating space for others to act and shaping 'landscape' conditions for action. This shows that becoming-democratic is never a linear process towards deterritorialisation: 'pragmatics' (Deleuze & Guattari, 1980) means working with what already exists, which might mean some intentional territorialisation at least in the short-term to achieve longer term deterritorialising goals. Our analysis also shows how projects develop collective ties to empower one another to achieve individual and collective goals: attempting to exploit their associative ties to effect change in more territorialised (less democratic) systems.

4. Concluding discussion

This article has outlined and employed a novel, geographically-sensitive conceptualisation of assemblage-democracy, utilising an analytical conceptualisation of deterritorialisation-*as*-democratisation and a multi-faceted approach for understanding construction of assemblages in a democratic context, paying attention to matter, publics and scale. In doing so we demonstrate how materiality is central to understanding democratic experiments in resource governance.

Utilising our conceptualisation through an empirical study of democratic experiments in the guise of community energy projects, we explored: first, how materiality produces democratic dispositions in assemblages; second, how these dispositions interrelate with emergence of different publics within projects, which in turn reflects resource differences and conflicts between different systems and publics; and third, how those engaged in democratic experiments might employ resources through self-organisation to employ different tactics and strategies in the face of territorialised, embedded systems of hierarchy. We found processes of becoming-democratic to be enmeshed with territorialising and deterritorialising consequences, even where deterritorialisation is the desired goal. These questions about conflict, negotiation, resources, and power are inherent in how democracy is performed and achieved.

Our findings have wider implications for considering democracy within resource governance. First, our article builds on a body of earlier geographic work by Don Mitchell, Lynn Staeheli and others seeking to pluralise and decentre democratic thinking away from specific institutional forms and practices. This is necessary for thinking about democracy from an assemblage perspective; and our conceptualisation enjoins us to consider how far we might pluralise and decentre considerations of democracy. It makes us consider what democracy 'is' within an understanding of the world based on construction and emergence – and as a result experimentation – rather than production and evaluation of specific structures for decision-making. This approach also helps us view energy not as a pre-existing resource 'waiting' to be governed, but as brought into being as a governable object through an amalgamation of matter, publics, and geographic constructs.

Second, as we moved through our empirical investigation, the emergent conflicts, negotiations, and pragmatic strategies to overcome resource imbalances made us reconsider some of our initial thoughts about becoming-democratic: we have a clearer view now that our findings remind us to explore democratic experiments as involving a *contested* process of becoming. In this sense our findings imply the need to consider in detail the exercise of power and mobilisation of resources within and between assemblages. An assemblage lens complicates how we think about democracy. In particular, highlighting connectivity and impossibilities of extrication destabilises how we might think about democratic 'experiments': these always take place 'in the middle of things' (Latour, 2005). But such recognition also means seeing openings and opportunities for change in even the most territorialised assemblages. In other words, democratic experiments should not just accept their inevitable 'impurity' but instead embrace this as central to possibilities for change. Becoming-democratic is a pragmatic process. The projects we investigated in the research for this article vary but they show that community energy is fraught with challenges from a

democratic perspective. However, taking the discussion back to specific debates about energy, the argument should not be about whether community energy is 'the' answer to energy democracy but whether such projects can provide points of interference with existing systems alongside other forms of democratic experiment. In more general terms a politics of assemblage-democracy would focus on the need to consider democracy as a way of being, to be sought in everyday interactions as much as in specific circumstances and spaces or in relation to particular 'controversies'. Or rather, our daily lives should be viewed as a series of controversies to be negotiated in different ways but according to a democratic subjectivity.

Third, our findings raise questions about what Marres and Lezaun (2011) talk about as processes of separation and extrication: to produce new democratic entities, it is seen as necessary for projects to create space for their experiments, which might involve a degree of territorialisation to protect themselves from anti-democratic forces. However, assemblage-democracy complicates notions of discrete forms of societal organisation. The projects we studied did not and could not exist outside the state, nor outside market arrangements, nor other socio-cultural norms and ways of being. This generates questions about how democratic experiments and movements situate themselves within wider assemblages of societal organisation. To what extent is separation-to-experiment possible even if it was desirable? The implication here is that rather than look at how projects and movements become-democratic 'in themselves', we should reorient our thinking towards the production of connections with different entities and how each new connection creates possibilities and conflicts for becoming-democratic. Democracy is explicitly a process of engagement with 'others', within which negotiation and conflict is inevitable. This process is about how, 'New objects and relations between objects become thinkable' (Mouffe, 2000, p. 139) across different entities, and the nature of ties created in doing so.

Fourth, continuing our focus on matter, our findings prompt further consideration of how democratic possibilities, negotiations and conflicts become embedded within material arrangements. Contributing to emerging scholarship on materiality and democracy our own conceptualisation and empirical findings further emphasise diverse materials as powerful operants within democratic experiments, both in how material arrangements shape democratic experiments in different ways but also how their disruption – for instance through technological change – open new possibilities and conflicts for becoming-democratic. The deterritorialisation approach creates explicit focus on 'becoming-minoritarian' and heterogeneity, in turn emphasising a form of democracy based on reconfiguring difference rather than producing commonalities. From a matter-oriented perspective this means concern for how technologies and material objects – pipes, wires, panels, turbine blades and so on – are brought together in ways that promote diverse engagement beyond their initial mobilisation: that in effect they are never allowed to settle and become pacified as incontestable parts of the landscape. There is a challenge to follow long-term processes of becoming-democratic as much as the first moments of experimentation, which are so often the focus of scholarly activity (this article included).

Finally, taken together these findings have implications for understanding democracy spatially. For instance, our findings point towards need to further investigate and consider in more depth how spatial configurations are put to use, constructed and deconstructed in pursuit of becoming-democratic, again with emphasis on arrangement of materials over space as a critical component of that. As part of wider ongoing debates about spatial constructions our findings also promote ideas about scalar configurations as socio-material constructions: something worthy of more detailed attention. Further, although our focus here was largely limited to particular sites in order to set out our core conceptual argument, it would be instructive and important to extend these analyses beyond specific sites and/or to situate these sites within distanciated or translocal material assemblages. Such analysis would further understanding of the bounding of matters of concern

within democratic experiments, drawing out how distant or unseen publics can remain hidden/excluded. This further opens up consideration of the emancipatory possibilities and challenges of a thing-oriented politics. More fundamentally, assemblage-democracy is necessarily spatially oriented in its ontological implications: Latour (2005) makes clear that democracy requires being free from time-rooted ideas of 'succession' and 'progress', to instead focus our attention on *space* as a "series of simultaneities", where configuring and reconfiguring difference (but never presuming to reconcile those differences) are at the forefront.

To conclude, through our conceptualisation and operationalisation of assemblage-democracy, we hope our article will offer insights into how a focus on material resource governance both requires new understandings of democracy, and provides opportunity for developing these. The issue of what democracy *is*, is contentious and we make no claims to have 'solved' this debate. We have provided our own theoretically-informed contribution, rooted in empirical investigation across different contexts, within an understanding of democracy based on construction and emergence rather than the evaluation of specific decision-making processes and structures. There is a task to take this work further to refine or reject the approach through empirical work in other settings and domains: we have aimed to generate something that can be explored beyond our study's specific empirical context. Indeed, our work in this article seeks to challenge us and others to engage in a project to interrogate the relations that (de)territorrialise the production and maintenance of socio-material resource configurations in order to generate further and deeper understandings of what it means to 'become democratic'.

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