



Article

Protesting Populist Knowledge Practices: Collective Effervescence at the March for Science London

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Abstract

On 22 April 2017, 10,000 people joined the March for Science London, one of 600 events globally asserting the importance of science against post-truth. Here we report an online and on-the-ground observational study of the London event in its distinct, post-Brexit referendum context. We analyse the motives for marchers' attendance, and their collective enactment of what science is and why and by what it is threatened. Drawing upon Interaction Ritual Theory and the concept of civic epistemology, we develop the notion of *populist knowledge practices* to capture the 'other' that marchers defined themselves against. We detail how this was performed, and how it articulated a particular vision for science–society relations in Britain. In closing, we argue that the March for Science is one in a chain of anti-populist activist events that retains collective effervescence while transcending specific framings.

Keywords

activism, Brexit, civic epistemology, expertise, March for Science, observation, populism, protest

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On Saturday 22 April 2017 around 10,000 people walked from the Science Museum to Parliament Square in the London rendition of the ‘March for Science’. One of five marches in the UK, and over 600 across the world, it brought together a diverse collective of people unified by a notion that science was undervalued, underfunded, or under threat (Sasse and Tran, 2018). These science-specific issues were localised articulations against broader global moves towards what we term ‘populist knowledge practices’; most explicitly the climate change denialism of Donald Trump and the Brexit referendum related anti-expert sentiment in the UK. As such, the London March for Science can be understood as one manifestation of collective resistance and protest against the prevalence of post-truth and alternative-fact discourses in contemporary political life. Here we report a combined digital and on-the-ground observation of the London March for Science that identifies the diverse assemblage of people, ideas, technologies and materials that enacted specific visions of what science is and why it is considered to be under challenge.

The idea for the march arose on 20 January, when Reddit user *beaverteeth92* responded to a thread discussing the deletion of the term climate change from the White House website, by suggesting ‘[t]here needs to be a Scientists’ March on Washington’ (*Beaverteeth92*, 2017). This date is significant, as it was the day of Donald Trump’s inauguration as the 45th President of the United States. It was also the day before the Women’s March, another global protest centred on Washington that in turn had its origins in a single post on Facebook made three months previously, on the day after Trump’s election (*Beyerlein et al.*, 2018). The science march plan took off, and within two days the newly formed Twitter account *@ScienceMarchDC* had over 60,000 followers (*Miller*, 2017). Within two weeks, this spread internationally, and soon *@LDNsciencemarch* Twitter account followed to correspond to the London march. The march was planned as a global day of action that would take place on Saturday 22 April, the date of an existing set of regular environmental protests known as Earth Day. This US-led environmental framing was present in the London march, but there was also a distinctive UK-specific angle to the UK events. This focused on the Leave campaign’s victory in the June 2016 referendum on the UK’s membership of the European Union, with the march demonstrating a clear anti-Brexit narrative. Before the referendum, Conservative MP and then prominent Leave campaigner Michael Gove made an infamous comment during a Sky News interview, stating ‘I think the people of this country have had enough of experts . . .’, a statement that quickly attracted significant criticism for its anti-science connotations. The period following the referendum saw heightened concerns within UK scientific circles about access to funding and movement restrictions on scientists in and out of the country. However, the march took on further immediacy when, just four days before it commenced, Prime Minister Theresa May announced a snap general election for 8 June, making the March for Science the first large protest of the election cycle.

This article reports an analysis of the March for Science London focusing on the practices of marchers as they marched and communed, both on the ground and online. Using observations, interviews, and Twitter analysis, we articulate the core messages of the march, how they were communicated, what vision of ‘science’ they enacted, and what modes of sociotechnical interaction marchers used among themselves and with others to accomplish this. We argue that marchers stood in opposition to concerns we bracket

under the term ‘populist knowledge practices’. In doing so, we assess the extent to which the march constituted a successful interaction ritual between a constellation of actors through collective effervescence (Collins, 2014a; Durkheim, 1915). The article is divided into six sections. First, we review existing sociological accounts of the March for Science. We then detail our theoretical repertoire, before describing our methods, and presenting the core empirical material as a multimodal account of the March for Science London. We close with a discussion addressing our key questions and assessing the legacy of the march as a site of protest and community building.

The Sociology of the March for Science

There is a growing sociological literature on the March for Science movement. These studies consider three main themes, first the motivations, reflections and demographics of marchers, second, discussion of how sociologists as critically engaged social scientists should relate to the march, and third, the cultural representations of science during the march. One of the first and most detailed accounts, MacKendrick (2017: 898) identifies a short pre-history to the march following Trump’s election, particularly two ‘Stand Up for Science’ rallies, that with the March for Science represent a new form of science activism. These events, she argues, operate to defend science-writ-large under the single banner of science in ‘a form of boundary work that erases divisions within science, rather than demarcating them, while simultaneously (and less visibly) making a distinction between scientists and other kinds of knowledge producers’. *Sociological Forum* followed MacKendrick’s article with a set of six responses, including the discussion of how sociologists should engage with this science-writ-large activism. In these, Ruane (2018) and Shostak (2018) urged sociologists actively to stand up for science. At the same time, Brulle (2018) expressed concern, noting that the march embodied the politically naïve belief that supplying scientific information to policy-makers and publics would result in action to address climate change, while Whooley (2018) argued that sociologists should unpack what ‘science’ means, noting heterogeneity among disciplines was hidden. Frickel (2018) agreed, suggesting the science-writ-large framing is unlikely to be durable over time. Finally, Fisher (2018) reported survey results from 199 people collected during the March for Science Washington, showing 30% of marchers had not protested before, and that 82% had undergraduate degrees and 47% post-graduate degrees.

In other work, Penders (2017) analysed the promotional materials for the march and placard images circulated online, to argue that marchers promoted a myth of science as the provider of bias-free truths. This, he suggests, perpetuated the exceptionalism and elitism of scientists, in part through the use of in-jokes on placards. Further research by Ley and Brewer (2018) conducted a social media analysis of 1200 respondents on 81 international March for Science Facebook groups, and an in-person survey with 184 people also at the March for Science Washington, finding that Facebook was key to how people became aware of the march, although offline channels were also important, and that other platforms, such as text messages and Twitter, became more important in communicating during the march itself. In US-focused research, Motta (2018) surveyed 428 Americans online three days before and two days after the march to find it made Democrats more positive about science and Republicans more negative. In Europe,

Guenther et al. (2019) conducted a focus group with attendees of the follow-up March for Science 2018 in Jena, Germany, finding that compared to the US march, the participants put more emphasis on maintaining a separation between fact and opinion, placed little emphasis on environmental issues, and were not engaged in criticism of the US administration.

The work reported here extends this literature in important ways by addressing key gaps and developing a novel theoretical framework. This article provides the most detailed qualitative analysis of the London march, using observations and interviews, and collating online and on-the-ground material. The study here also provides a thicker account of the modes of interaction and enactment engaged in by marchers, through an analysis of the performative work and ritualistic practice the marchers engaged in to produce a collective representation. As part of this, our study also utilises an analysis of the placards used by marchers, which, unlike that of Penders (2017), is based upon empirical material collected at a specific march, as opposed to online representations of multiple marches. This article is also distinct in that it considers the specifics of the march in London, and the particular context of UK politics at that time, most notably the issue of Brexit, and the forthcoming UK election. The most significant and distinctive contribution, however, is our theoretical work that draws upon social movement theory, science and technology studies, and interaction ritual theory in developing our novel theoretical contribution, the concept of populist knowledge practices as the oppositional identity against which marchers enacted their collective representations. We now articulate this theoretical framework in greater detail.

Theoretical Repertoire: Interaction Rituals, Civic Epistemologies and Populist Knowledge Practices

The study of mass protests is the study of collective identity. This has been a regular feature in the study of new social movements and contemporary social media infused protests. In the 1980s, Touraine (1985) analysed the ways in which individual beliefs and collective action work together by focusing on how individuals negotiate, understand, and build up their action by interacting with others. The dynamic mechanisms of common language, rituals, practices, and cultural artefacts can create a collective identity constructed in interaction and held together through multiple and sometimes incompatible definitions. Polletta and Jasper (2001: 285) provide a productive definition of collective identity specifically in the context of social movements, as ‘an individual’s cognitive, moral, and emotional connection with a broader community, category, practice, or institution . . . a perception of a shared status or relation, which may be imagined rather than experienced directly’. For them, ‘[c]ollective identities are expressed in cultural materials—names, narratives, symbols, verbal styles, rituals, clothing’. This given, as Mellucci (1995: 40) argues, ‘the empirical unity of a social movement should be considered as a result rather than a starting point, a fact to be explained rather than something already evident’ (1995: 40). In this regard, the collective identity of a movement is a dynamic process that requires analysis (Flesher Fominaya, 2010). As such, across this article, we document the interactional and ritualistic forms evident during the March for Science that enact collective identity and assert empirical unity, while also analysing the

contradictions and frailties within these performances. Central to our analysis is that while we have taken this departure from studies of new social movements, a question remains over the extent to which the March for Science can be understood as a social movement of this type. Core to most new social movement theories is the sustained activity of such movements, which evolve and endure through mobilisation and action (Diani, 1992; Flesher Fominaya, 2010; Melucci, 1996). The March for Science, in contrast, did not become a sustained and enduring movement. Instead, it features more as a singular collective ritual of protestation around the role and needs of science in contemporary social life. To analyse the complex relations between individuals, specific collective movements and broader collective identities and movements, we use Interaction Ritual Theory, primarily as articulated by Collins (2014a).

Interaction Ritual Theory is an approach that deploys micro-sociological accounts focused upon situations as momentary encounters among human bodies charged with emotions and consciousness informed by previous encounters. It is exactly this linking of momentary embodied practice with extended collective identities that gives Interaction Ritual Theory its purchase for our study. As Collins explains:

[t]he central mechanism of interaction ritual theory is that occasions that combine a high degree of mutual focus of attention, that is, a high degree of intersubjectivity, together with a high degree of emotional entrainment—through bodily synchronization, mutual stimulation/arousal of participants' nervous systems—result in feelings of membership that are attached to cognitive symbols; and result also in the emotional energy of individual participants, giving them feelings of confidence, enthusiasm, and desire for action in what they consider a morally proper path. (Collins, 2014a: 42)

These ideas develop Durkheim's (1915) notion of 'collective effervescence', which Collins describes as 'any intensification of a shared mood . . . when certain micro-processes of social interaction take place in everyday life' (Collins, 2014b: 299). For Collins, interaction rituals form chains in which previous situations inform the current, which in turn will inform those of the future. Successful interaction rituals strengthen bonds and are more likely to form chains, while unsuccessful encounters are less likely to be repeated. We will provide an analysis of micro-processes at the March for Science in the body of this article, before considering its success as an interaction ritual, and its relation to new social movements, in our discussion.

We also draw upon Science and Technology Studies (STS) and its central insight that scientific knowledge and practice is itself cultural and enacted (Felt et al., 2017). This is particularly useful in our context to link collective identities to the politics of scientific practice. Specifically, we use two concepts developed by Jasanoff. First, Jasanoff and Kim's (2009: 120) account of the 'sociotechnical imaginary', defined as 'collectively imagined forms of social life and social order reflected in the design and fulfilment of nation-specific scientific and/or technological projects', whereby 'technoscientific imaginaries are simultaneously also "social imaginaries," encoding collective visions of the good society' (Jasanoff and Kim, 2009: 123). In later work, Jasanoff (2015: 19) argues these 'collectively held and performed visions of desirable futures' are 'animated by shared understandings of forms of social life and the social order attainable through, and supportive of, advances in science and technology' that are 'collective, durable, capable

of being performed; yet . . . are also temporally situated and culturally particular' Jasanoff (2015: 19). We use this in concert with Jasanoff's idea of civic epistemology, by which she conveys:

the institutionalized practices by which members of a given society test and deploy knowledge claims used as a basis for making collective choices . . . [M]odern technoscientific cultures have developed tacit knowledge-ways through which they assess the rationality and robustness of claims that seek to order their lives . . . These collective knowledge-ways constitute a culture's civic epistemology; they are distinctive, systematic, often institutionalized, and articulated through practice rather than in formal rules. (Jasanoff, 2005: 255)

Jasanoff shows that these collective knowledge-ways vary between nations and are co-produced with a nation's technoscientific and political culture. As this article develops, we argue the marchers are contesting the appropriate mode of civic epistemology in the UK by asserting a specific sociotechnical imaginary around scientific expertise and public policy. This is pursued through the collective effervescence of an interaction ritual.

Key to this argument is our notion of 'populist knowledge practices', which we use to capture that which marchers defined themselves in opposition against. As we will show, through this novel interaction ritual, both online and on the ground, marchers enacted a mode of collective identity around the politics of science that, importantly, also enacted an oppositional collective identity for problematic others, whose populist knowledge practices undervalued scientists and scientific methods, resulting in a range of environmental, health and social justice issues. While the notion of populism is remarkably slippery and results in multiple accounts of its meaning (Kaltwasser et al., 2017; Moffitt, 2016; Rooduijn, 2019; Taggart, 2000), a generally accepted theme of populism is the sovereignty of 'the people' over a (problematic) elite, and the ostracizing of an 'other', which is, as Moffitt (2016) argues, often funnelled through the performance of political leaders, both right- and left-wing, who situate themselves outside this elite. Mede and Schäfer (2020) develop the notion of 'science-related populism' to characterise the specific practices of populist action in relation to science. They argue that science-related populism is cast through a distinction between 'the ordinary people' and 'the academic elite' that attributes virtuousness to common sense while setting it against the immoral, illegitimate, and artificial epistemology of science. Populists, in this account, prefer a reliable 'epistemology of ordinary people' (Mede and Schäfer 2020: 481) through which they assert their right to formulate science-related power claims and decision-making sovereignty. Mede and Schäfer's (2020) notion of science-related populism is a compatible but quite distinct concept to our notion of populist knowledge practices. Both speak to a conflict between scientific and populist imaginaries and practices that is cast through what Jasanoff (2005) calls civic epistemology. However, while Mede and Schäfer (2020) focus upon the cultural life of populists, our focus is upon the cultural life of those protesting against populism, as enacted through the March for Science London. As such, our analysis is well aligned with Rooduijn's (2019) call for studies of populism that recognise the multiplicity and fluidity of the conceptualisation of populism, while also remaining precise and distinctive in how it is applied in a specific empirical context.

The notion of populist knowledge practices captures the civic epistemology of the ‘other’ that marchers defined themselves against to form their collective identity. As such, our article is not a statement on what populism is or how it operates. Instead, populism here is a negative relational contrast through which the marchers performed collective identity, specifically in relation to knowledge practices. Subsequently the concept of populist knowledge practices is aligned with numerous studies in sociology, symbolic interactionism and social psychology on oppositional identities. Collins (2014a), in developing his Interaction Ritual Theory, discusses how gun-owning Americans experience an increased sense of membership with each other through the political opposition of others, further hardening of role of the gun as symbolic emblem. In other contexts, Skeggs (2004) argues middle-class identities define themselves as respectable in contrast to working-class people, just as Tyler (2013) argues working-class stigma is relationally defined against this normative ideal. In more recent work, Scott (2019), developing Apter (1988), argues oppositional identities can be intentionally developed and maintained, rendering negative relational contrast an active practice, for example among women who chose not to become mothers. Sweet and Giffort (2020: 1) analyse the role of oppositional identities in how scientists enact their own expertise through ‘antithesis performances’ (2020: 1) of bad experts as non-credible others. Flesher Fominaya (2010) and Polletta and Jasper (2001) all argue that oppositional identities are regular features of social-movement formation. Here we argue the core form of intersubjectivity performed at the March for Science was exactly this form of relationally and oppositionally defined coalition against populist knowledge practices, as an actively adopted – but as we will show relatively temporary – mode of membership. In this context populist knowledge practices constitute a vision of knowledge making done wrong, a situation in which the will of a misinformed people, or the will of their charismatic leaders, is given a precedence over the careful work of scientific research, and the knowledge practices this invokes.

Methods

We conducted a social media study and on-the-ground observational study of the March for Science London as it occurred on 22 April 2017. Our team of five researchers arrived two hours before the march commenced and walked with the marchers for its duration, employing walking as method (Bates and Rhys-Taylor, 2017; Moles, 2008). Four team members conducted 37 interviews with 45 interviewees as we marched, as well as taking short videos, audio recordings, photographs, and written and audio-recorded fieldnotes. The project was approved by the Brunel University London research ethics committee. Interviewees signed consent forms and were assured quotations would be used anonymously. The team was intentionally divided across the march to document activity at the front, middle and back of the procession. One member was specifically charged with recording the content of as many placards as possible and supplemented this *in situ* data with images of placards from the London march shared on Twitter, YouTube, and other digital outlets, resulting in a database of 464 individual signs. We used TAGS (<https://tags.hawksey.info>) to live record Twitter activity between 10 April, 13.05 to 26 April, 9.34, collecting 15,147 tweets. Interviews were transcribed and thematically coded in

Nvivo. Twitter data were analysed and thematically coded in Excel. *In situ* fieldnotes and recordings were used to develop first individual, and then collective, analytical fieldnotes detailing the broad set of activities observed chronologically. The placard data was coded in Excel and subjected to frequency analysis.

The dataset is multimodal and the analysis identifies multiple themes. In writing, we report a chronology of the march, following its pathway through London, across a five-hour period. It means our text shifts through analytical themes (how, where, and why marchers marched) and data-sources (observational, online, and interview). This format captures the experiential qualities of being at the march, highlighting the excitement, anger, awkwardness, frustration and humour that permeated this collective interaction. Doing so synthesises the multiplicity of experience, as is befitting of the diversity and mobility of the setting.

Our five-hour data collection window for the on-the-ground material means that our analysis captures the march as it was experienced by the majority of marchers, as a temporally and spatially limited interaction ritual bounded by route and duration. This is a legitimate way to study the march as a momentary encounter, engaging with what it meant to experience the formation of this mode of collective practice that lasted only hours in real time, along with the march participants. However, this does mean that our data do not allow us to comment on any behind-the-scenes organisational work that supported the event, and we do not attempt to address this issue. Instead, our focus is upon the situational and embodied practices of formation and articulation during the five-hour period that the march took place, and its social media trails. In what follows, we provide a chronological analysis of the march in progress.

The March for Science London

The march assembled on Exhibition Road, outside the historic science museum. The Director of External Affairs of the Science Museum had formally endorsed the march through a guest post on the march's official website (Science March, 2018), and as such, march organisers, the museum, and the police, all deemed the museum an appropriate starting point. The number of marchers grew in the hours leading to the midday departure time. The Twitter hashtag #ScienceMarchLdn was already alive. Tweets from the day before included 'Can you help get #ScienceMarchLDN trending tomorrow?' and 'Job for tonight: Come up with something witty and clever to put on a placard. Then try and make one'. By the morning of the event Tweets included 'Off to #sciencemarchLDN! Super excited!' and 'I got up at 5:15am today to get the bus to London for #ScienceMarchLdn. If that's not proof of my commitment to science then nothing is'. During this period, as marchers assembled, Tweets worked to convey the momentum, humour and excitement of the ensuing event, 'Some excellent placards already!', 'great slogans on display', and 'People queuing as far as I can see'.

During this period our team started interviewing marchers, asking why they were there and what they hoped it would achieve. One marcher, capturing the sentiment of many, told us/s/he was there for

several reasons, I think that the general state of science representation in government is really dire, I think it's very important that we show policy makers, that we scientists are a voting block

who have interests. For instance, you know, EU funding is very important to us, we're very worried about what's going to happen to that. We want guarantees for Horizon 2020 [EU science] funding for instance, also evidence-based policy, we want that to be more prominent within parliament. We're obviously very concerned about what's happening in America with Trump and his gagging orders of scientists, you know, whether that actually happens in the end or not. He still has a very clear disdain for science and evidence-based policy. We're very concerned about our government's willingness to cosy up to that sort of regime. Not just that, anti-expert sentiment in the last few years has been increasing. We want to make our presence known as it were, and we want to show the people in charge that we should be listened to just as any other interest group.

This marcher consistently used 'we', asserting a commonality and group identity to the marchers and their vision. Indeed, the themes raised – Trump, the EU, expertise and evidence-based policy – are all evident across the march (although there were others), and themes we return to later.

At the front of the march two stewards in high-vis vests held a banner bearing the March for Science name, logo, and hashtag #sciencemarchldn. Then, just before 12.00, those at the front shouted a countdown from ten to one to mark its launch. Audible only to those at the very north of the march, the countdown was as much socially awkward and non-committal as it was determined and direct. But the stewards stepped forward and the now reported 10,000 marchers followed. Progressing north along Exhibition Road, sets of cheers reverberated southward along the crowd as this novel constellation of people, placards and political agendas started walking. Twitter too marked the moment, Tweets included 'And we're off!' and 'Sun's out and we're moving', both Tweeted with photos of crowds holding placards raised, including 'They Acted, We Reacted!', and 'Nature isn't fooled by alternative facts'.

There was visual spectacle within the crowd. Costumes included a number dressed unflatteringly as Donald Trump, and several as former-UK Independence Party leader and leading-Brexiteer Nigel Farage. Other costumes also referenced the USA, such as at least two statues of liberty, while others focused upon wearable symbols of science–animal relationships, including paleontology in a Tyrannosaurus rex costume, and reproductive genetics from a young girl dressed as Dolly the Sheep, the first successfully cloned mammal. But the most common costume was the donning of a white laboratory coat, often marked with slogans ('Science is the cure for stability', 'Tories R illogical') and accompanied by cartoon goggles or other costume dressings. One interviewee explained their preference for wearing a lab coat: 'it just stands out. It's very good. It's white and it's very, stereotypically sciencey.' In this case, the costume was seen to add both to the spectacle and provide a visual latch upon which science could be enacted and politicised. As such, bodies and their adornments at the march became sites of collective identity and contest through how they were clothed, as well as how they moved.

Yet the march was a multisensory procession, beyond just the visibility of placards and costumes. The soundscape merged three main elements: the background noise of central London's multiple routeways, the murmur of conversations among marchers, and outbursts of collectively orientated noise. Examples include chants (often short-lived), cheers that passed backwards (never forwards) through the march, and the banging, blowing or tooting of musical props brought especially for the purpose. Chants were

usually conducted within often small sub-sets of marchers, never engulfing the march in its entirety, and usually lasting under a minute. Perhaps the most frequently heard chants were the repeated loop of ‘science not silence’, and variants of the more knowingly humorous call-and-response ‘what do we want? *science*. when do we want it? *after peer review*’ (a chant also digitised in multiple Tweets). The cheers flowing backwards through the crowd were more enthusiastically embraced by larger numbers of marchers, although their progression through the march required only momentary involvement as the cheer passed behind. This soundscape resulted from a level of curation by the organisers. There was a tendency for the stewards to be more active in starting chants, sometimes showing dissatisfaction through facial expressions when marchers nearby did not join the collective vocalisation. A form of curation was also evident in the bringing of musical props, as one interviewee revealed: ‘I came with a big group from Sheffield by coach, and they said bring things to make noise . . . so I brought a Peppa Pig harmonica and a saucepan’. Other props included whistles and cowbells, and among the most distinctive (and well received), a marcher wearing green socks pulled to the knee emblazoned with the word ‘science’ played tunes including ‘When the saints go marching in’ and the ‘Emperors march’ (from the Star Wars films) on a pink trombone.

This generated soundscape was generally appreciated by marchers, who laughed, clapped and cheered when they felt it appropriate. But, like many features of the march, these collective representations were laced with either a sense of awkward irony or celebrative middle-class fun, instead of becoming impassioned or angry. As Peter Etchells, a biological psychologist who spoke on stage at the end of the march, explained in a media interview on YouTube, ‘it’s great, there’s lots of nerdy signs here, nerdy chants and stuff, everybody’s feeling very embarrassed about being here and being stared at like any good scientist. The sun’s out, it’s brilliant.’ (The Cosmic Shambles Network, 2017). Embracing the awkwardness of the geek was also visible in placards such as ‘So severe even the nerds are here’, and one simply stating ‘Nerds’, with arrows pointing downwards towards those carrying the sign. In this regard, the stereotypes and cultural identity politics of scientists were a site of play and resistance.

The collective was also enjoying each other’s costumes and placards. A core theme, mentioned in 20 of our 37 interviews, and on 5.4% of the signs, was the situation in the USA, particularly Trump. Linking the UK and US experience, one placard featuring a picture of Theresa May and Donald Trump warned ‘Do not piss away our future’. Others focused on the USA alone, including ‘More Science less Donald’, ‘Trust Science not Trump’, ‘Trump Climate Disaster’ and in one of the few signs that was multiply produced, a cartoon of Trump’s hairstyle and the question ‘Fake?’ followed by a picture of a climate chart saying ‘Real’ and the text ‘Climate action now!’ As one interviewee explained, ‘we’re doing this largely, I think, in solidarity with the [march] in America, where there’s severe danger. I mean science is utterly, utterly undermined there. Particularly climate science, there are publications disappearing off eco-websites’, and similarly, ‘Donald Trump has said that climate change is a hoax, because it’s not convenient to him and his cronies in the automotive industry, in the power industry, and that’s just not true as far as I can see.’ The motivation of the Washington march was shared by many in London. As one interviewee commented, ‘I never had marched until Trump became president, and since he became president, this is my fourth march.’

Another interviewee asked about how they felt about the Science march, replied ‘I love it, this is actually my third march this year, I’ve never been on a march before January’, revealing they’d also attended the Stand Up to Racism march and the Women’s March, noting ‘there’s so many marches, but I’m picking the ones I feel quite strongly about’. In this regard, the March for Science was the latest iteration of a set of anti-Trump mobilisations, in this case orientated around the knowledge practices of right-wing populism.

Other themes were also visible. 17% of the placards referenced environmental issues, with examples including ‘change the politics not the climate’, ‘global warming is not a conspiracy’, and multiple iterations of ‘There is no planet B’. Others also linked this directly to the UK political context of the upcoming election: ‘Toxic air + Toxic Tories out’. Another distinctively British political theme was seen in the 4.5% of placards referencing Brexit. Many related to the impact on science funding, ‘Show me what you’ve got to replace EU funding’ and ‘Celebrate science – EU-phoric’. Others targeted the specific comment by Michael Gove that ‘people in this country have had enough of experts’ during the EU referendum campaign: ‘I haven’t had enough of experts’, ‘Sick of people who are sick of experts’, and combining this sentiment with the wit typical of many placards, ‘Experts in this country have had enough of people like Michael Gove’. This defence of expertise in the UK context related to broader, and often US-orientated, concerns about ‘alternative facts’, a phrase first coined by Kellyanne Conway, Counselor to the President, in a media interview two days after Trump’s election. Placards included ‘Alt-facts aren’t facts’, ‘Marching for evidence base – not alternative facts’, and the more direct ‘Alternative facts are bollocks’. The sentiment often featured without reference to the Conway quotation, for example ‘Facts matter’, ‘Evidence based policy making not policy based evidence making’, ‘We want data (in the correct format)’, and ‘Stop making shit up’. Moving further away from science policy, some placards also revealed concerns with knowledge claims seen as contrary to mainstream science thinking, for example ‘Vaccines save lives – GMOs are safe – Climate change is real’ and ‘Just say no to pseudoscience’. Through this messaging, marchers engaged in what Gieryn (1999) terms the boundary-work of demarking science from non-science, making clear that science was best. The ‘other’ here being clearly defined in an interlacing of US, UK and global civic epistemologies that were thought to undervalue scientific knowledge practices.

The march was an opportunity to represent what science is and who scientists are. As one interviewee told us:

I guess it’s just a misconception about what it is, about people who are scientists as well? People are surprised when they meet me. And they see, you know, a fairly young girl who is mixed race, who has piercings, who likes metal music and yet who has committed their life to science. So the fact that people expect me to be an old man, you know . . . it really bothers me.

A number of placards addressed gender in science, ‘STEM for fem’, ‘OK ladies, now let’s get information’, and in reference to Cyndi Lauper’s hit song, ‘Girls just wanna have FunDing for science’. One interviewee, with one placard saying: ‘I am a nasty woman scientist’ (in reference to Trump’s labelling Hillary Clinton as a nasty woman) and another with a picture of chemist Rosalind Franklin, explained her reason for being there:

I wanted to make my voice heard and I wanted to introduce my two young daughters to the protest movement. We actually live in the States and I've taken my older one to the March for Women . . . my sister and I are both scientists, working in the field, so this overlap between many of the issues that certainly are current in the States, women's issues science, which is a perennial issue, and also particularly support for science and science informed public policy.

The interviewee revealed the march was attended by 'three generations; my mother, me and my sister, and my kids. My mother took me to the first Earth Day march in 1970 in New York city.'

Family was a present, but less visible, theme in the march, discussed by four of our interviewees. One, speaking of their young son, declared 'He's a future scientist, he hopes'. Another, holding a placard reading ' $R(\Omega) = V/I$ – resistance is not futile', explained their absent son designed the sign, and 'it has scientific things, that my son understands, but I don't completely!' The sign captures another element of collective identity formation at the march, as it is one of a small cluster of in-jokes, in which marchers display signs that can only be properly interpreted by those with specific scientific expertise. Frequently these would be jokes or puns, hidden within equations, with several others like this particular example based upon the equation in Ohm's law of resistance. Others referenced π , p-values, and several we still cannot figure out. They evidence the willingness of some marchers to share a message (and a giggle) with each other more so than wider publics. Our interviews captured the appreciation many felt in this recognition of collective perspective. One interviewee noted 'it certainly makes you feel like you're not alone, other people have the same concerns as you, so it is a bit of a pick me up as well', another concurred 'at least we know that we're not alone . . . I actually feel a lot better, because I didn't expect there to be this many people'. In the most emphatic and celebrative account of this type, one interviewee exclaimed 'I think it's euphoric. It's the best thing I've done, I just can't stop smiling, the entire time, it's just the sense of community around it, it's amazing'. Finding people with whom you share the same feelings and opinions is historically a core feature in social movement construction (Gerbaudo, 2014).

The diversity of placards extended further: 'Earthquakes inevitable – war . . . is preventable', 'You know you fucked up when scientists are marching', and 'Voices raised'. One interviewee, featuring a picture of the Incredible Hulk on their placard with the text 'You're making us angry', explained 'I just wanted something funny and kind of eye catching.' Another, with the sign 'Science is sexy', said 'well sex sells, so I'm hoping that I can get this sign on a lot of social media, a lot of different platforms so we can bring awareness to science'. The march was overwhelmingly characterised by this DIY attitude to placard production. There were very few centrally produced duplicates, and the marchers appreciated this. As one said, 'what I like about it is that . . . there's no single placard, everyone comes up with their own things, it's really messy, that's the way science is, everyone has their own thing'. Another agreed: 'it's fun, because as I expected, there's lots of really good original banners. It's not one of these awful marches dominated by pre-printed Socialist Worker banners or what have you. There's lots of really funny, intelligent, different, diverse banners . . . that's important, because it shows that people are thinking'.

The march was picking up pace through Trafalgar Square, heading south along Whitehall passing Downing Street. The crowd started to thin, with some heading elsewhere, as the procession approached its final destination. While the march had clearly been enjoyed by those involved, throughout the event our interviewees gave limited accounts of what it might achieve. Typical responses included 'whether it achieves anything . . . I don't know', and 'realistically probably not a great deal . . . just raise awareness to people . . . along the route'. Some hoped for more, but tinged with scepticism: 'it's very hard to know what marches achieve . . . if it encourages scientists to stand up and actually . . . voice opinion that's a very good thing', another said 'hopefully they'll listen to us a little bit more'. Where direct benefits were identified, they related to the internal identity of the community: 'it's just important for people to know that they are not alone, that other people are feeling the same way they are', in 'a boost to morale and camaraderie' that extended internationally: 'the most important thing about us being here is we're part of a worldwide set of marches' and particularly across the Atlantic, 'this is effectively a solidarity action for what's happening in the United States'. By 13.50 the back of the march reached its destination in Parliament Square. A marcher tweeted 'Now for the speeches'.

The first speaker was Robin Ince, a comedian who hosts a science radio show with celebrity physicist Brian Cox. He introduced himself by saying, 'Hello, I am Robin Ince, and I am a non-scientist . . . I am here because I like being alive and it seems science really helps that possibility.' Using his assured professional delivery, he provided humorous stories of the value of science, before closing with 'Thank you so much for trying to come up with slogans, and then going "I'm not sure we can use that slogan, there are some scientific problems with that particular chant". It was a beautiful thing to watch'. A jovial approach was also adopted by Bioarchaeologist Brenna Hassett as she discussed barriers to people's aspiration to be scientists, saying 'We know scientists, not everyone knows a scientist. They have seen them on TV, the dude on TV is a dude, and he has white hair, and you shouldn't trust him with practical applications'. Astronomer and broadcaster Francisco Diego avoided humour as he stressed humanity's shared genetic history, and shared fragile environment, as one marcher tweeted a photo captioned 'Dr. Francisco Diego giving a wonderful speech using his inflatable globe!' Jon Butterworth, physicist at UCL and CERN, explained 'I'm very worried that at the moment there are trends that are retreating into isolationism and into nationalism, that will be very, very bad for us for many reasons, but one reason is it will damage science and our way of understanding the world.' Perhaps most critical of current scientific practice was author and science journalist Angela Saini. After noting London's roads were built by engineers, and the craziness of having to defend science, she said, 'now the rest of what I have to say might not go down so well . . .' before arguing 'the scientific community has a long way to go in addressing its problems of sexism and racism, and it's not just for the sake of diversity, this is for the sake of good evidence and good research'. This was also stressed by biological psychologist Peter Etchells, who also led a minute's silence at 14:40 for the victims of the Westminster terrorist attack exactly one month earlier.

In closing, the organisers reasserted the fun, collective, and nerd-embracing spirit of much of the march, by getting speakers to return to the stage and encouraging the crowd to join them in singing 'The Galaxy Song' from Monty Python's *The Meaning of Life*.

They then shouted ‘Thank you’ as marchers cheered and applauded, before people left in larger numbers. Some remained with friends or acquaintances, but the sense of the marchers as a unified whole softened swiftly. The interaction ritual quickly dissipated.

Discussion: Protesting Populist Knowledge Practices within Interaction Ritual Chains

The March for Science London was a collective enactment of oppositional identity against what we term populist knowledge practices. In this case, these practices were aligned with the climate change denialism of Donald Trump and the Brexit referendum anti-expert sentiment in the UK. Our argument is premised upon analysis of the micro-processes of social interaction both online and on the ground during the event. Symbolic and interactional resources deployed during the march include placards, costumes, tweets and soundscape elements such as chants and instruments, as well as the very route from Science Museum to Parliament Square along which the 10,000 bodies processed, that all afforded collective performances of geekiness and politicisation around how legitimate knowledge should be produced and used. The marchers articulated a broad vision of what science should be, what it should do, and why this was being inhibited. In Jasanoff’s (2005, 2015) terms, they were asserting a sociotechnical imaginary of how contemporary Britain, and other similar countries, should embed and respect scientific knowledge and method within public policy. The marchers were staging an intervention into British civic epistemology, arguing that the tacit knowledge-ways by which UK society assessed the rationality and robustness of knowledge claims had drifted too far from scientific methods and perspectives. In this way the march sought to encode a morally proper path through a collective vision of the good society, a society in which alt-facts and pseudoscience were dismissed.

Key to this collective assertion is the rejection of populist knowledge practices, as an oppositional identity against which marchers defined themselves. This imaginary captures a set of ways for producing and using knowledge that was positioned as epistemologically and morally inferior. Key signifiers of populist knowledge practices as articulated at the march include attempts to delegitimise scientific work through bias, corruption, intelligence deficits, or inattentiveness to scientific practices. This was associated with anti-internationalism, particularly but not only through Brexit, as well as other forms of conservative political campaigning, and adoption of counter-scientific knowledge practices such as anti-vaccination, anti-GMO, and most visibly climate change denial. Collectively, these ideas were bound up with a broader vision of the bad society, in which modes of inequality such as sexism, racism, and anti-intellectualism were normalised, and in some instances perpetuated through specific leaders, most notably Donald Trump, but also UK figures such as Michael Gove or Nigel Farage. This bad society was insufficiently attentive to core checks and balances, such as peer review and a notion of rational debate, that marchers positioned as core to the legitimate and morally appropriate knowledge practices of science. This focus upon appropriate processes of knowledge production shows how these are very much practices, as embodied and performed actions, of legitimising what should or should not be deemed credibly known. Both for the marchers, and the invoked populists they defined themselves against, it was

active participation in knowledge production, whether through processes such as peer review, voting to leave the EU, or choosing whether or not to accept vaccinations, that delineated one perspective from another. As Mede and Schäfer (2020) argue through their notion of science-related populism, the key site of contestation is sovereignty over the production of knowledge, and how that knowledge is applied in practice. As such, both populist knowledge practices, and science itself, are co-produced within the march through mutual enactment as a binary through which science is both threatened by, and the solution to, the former.

Subsequently, as Penders (2017) also argues, there is an extent to which the marchers are aligning themselves with, and enacting, the elite that populist knowledge practices attack. This is presented as both a moral and epistemic elite, and one asserting and fighting for its status, as seen vividly in the placard 'swarm intelligence against swarm stupidity'. This given, elite status is not fully adopted across the march, as the presence of forms of anti-elite sentiment such as 'scientists for smashing the ivory tower' demonstrate. In this regard, marchers stressed the superiority of science as knowledge-maker and evidence-base for moral judgements, centring its epistemological prowess, but distancing any role that may have linked this superiority to authoritarian power brokering. It also exhibits the fractured collective identity of the protest, whose character could only be understood as a process and not as a static parameter, with multiple meanings and motivations (Melucci, 1996).

In collectively marching, the digital, corporeal and material enacted meanings through internationally dispersed yet connected patterns of action focused upon a model of global solidarity. Yet this global character remained premised upon ongoing micro-sociotechnical interactions, as stewards with their hi-vis vests and poor quality megaphones sought to banister the marchers, giving them coherences as a collective. Without these and other mundane practices, the international solidarity, albeit online, attained through the marches would be diminished. As a move against populist knowledge practices, the London march echoed concerns found in other marches internationally, such as racism and immigration, gender and science, and environmental concerns. However, it was also cast within a distinctively British political context following the Brexit referendum and recently called election. Here, further evidencing the role of nationhood in Jasanoff's (2015) sociotechnical imaginaries, the march sought to define what Britain should be, and how it should relate to other countries. Most clearly, this was Britain as a member of the EU, but it was also Britain as something other than Trump's America. As such, the march represented an identity for protesting scientists that was both a rejection of the misrepresentation and downgrading of scientific advice in the UK, and also a loudly expressed worry that America provided a model for how this could become worse. Marchers differed on the extent to which scientific practice was deemed political or apolitical, but they carried a consensus that politics without science was a politics they did not desire.

It is valuable to be attentive to what the marchers themselves wanted to achieve. Interview data show that few thought the march would lead to clear and direct changes. Instead, they sought opportunities to express their position, and to recognise these opinions were shared by others. The march was not angry. There were few displays of raw emotion. Rather, it enacted cultural identities imbued with responsible concern and

informed political action, but also a sense of fun, geekiness, and sometimes awkwardness. Marchers played with the stereotypical image of the scientist, both seeking to challenge it as a site of white male privilege, but also embracing it in a form of satire that celebrated both scientific method and personal science-geek identity. The sheer number of lab coats, and the comments and laughter supporting the placards of others, is congruent with high levels of intersubjectivity and feelings of membership. Following Mellucci (1995), it is through these mundane performative practices that the empirical unity of the marchers is expressed and enacted. As Polletta and Jasper (2001) argue, this interconnected display of narratives, symbols, rituals and clothing afford the perception for both the marchers and those observing the march of shared and collective identities and actions. While the march may not have changed UK politics, it did operate as an encounter for building a moment of concerned but smiling collective effervescence.

There is a question as to how the March for Science should be considered in relation to social movements. This is particularly because the collective action of the marchers lacks the longevity of established social movements. As the march closed, the organisers did invoke sustained patterns of activism driving social change, declaring from the stage that ‘this is just one part of a larger movement!’ However, a year later, on Saturday 14 April, the 2018 March for Science London had been downgraded from a march to a rally, opposite Downing Street and with, in a generous count, perhaps 200 people in attendance, but at times perhaps as low as 50. The 2018 event was doused in a sense of disappointment, despite the obvious enthusiasm and commitment to the cause of those speaking and those watching. It was driven by a sense that it was symbolically important to continue to hold the event, even if the solidarity and momentum of 2017 had been lost. There is little to suggest the March for Science meets Diani’s (1992: 16) ‘essential condition [for a social movement], that the sense of belongingness exceeds the length of the public activities and campaigns’.

However, Collins’ (2014a, 2014b) Interaction Ritual Theory provides us a different perspective on how the march can be understood as part of a broader network of action. For Collins, interaction rituals can be considered successful when they form chains of momentary encounters that intensify bonds. Events in such chains are informed by those that came before, and inform those that come after, as successful interaction rituals generate sufficient emotional energy to propel individuals from one to the next. Clearly the limited scale of the 2018 event evidences a failure to generate sustained and enduring energy specifically around the cultural symbolism of science as threatened activity, as the 2017 march stands as a singular collective ritual of protestation. Similarly, we cannot talk about a concrete collective identity. However, we can still wield Collins’ framework in a more sympathetic manner by broadening the scope of what constitutes a follow-on interaction ritual, and in doing, gaining further insight into the continual reconfiguring of anti-populist activism. The data are clear that for many the March for Science was one of many interaction rituals that followed the Brexit referendum and the election of Donald Trump, and featured in a sequence of other demonstrations and protest actions (both online and on the ground). While 10,000 walked the streets for the London March for Science, a reported 100,000 marched through the city in July 2018 when Trump visited the country for the first time as President (CBS, 2018), and a claimed 700,000 joined the People’s Vote March in October 2018 to demand a vote on the final Brexit Deal (Guardian,

2018). Indeed, if we take the invocation of global solidarity seriously then these can be mapped to other marches internationally, as well as multiple other London-based demonstrations in this period. Each march affords some cultural identities more than others, but if we are to argue they represent a chain of successful interaction rituals, then we must also argue they bring with them a sense of solidarity and emotional energy that transcends the specific framing and identity politics of each march. The specifics of the science frame and the particular symbolic performances of under-respected science geekery mobilised in the March for Science existed as a collective enactment largely as a singular protest event. However, Interaction Ritual Theory allows us to understand how this one event formed part of a chain of mobilisations in which the overlapping but not identical concerns were enacted through these other frames, in a series of marches that articulate both continuity and difference across its various manifestations.

The March for Science London sought to assert a vision for what science should be and how it should be used. It articulated anxieties about global politics as they relate to science and scientists' lives. But it can also be mapped into a continuum of events that extend beyond the science focus alone into broader dissatisfactions with populist knowledge practices. It was both global and local at the same time, premised upon mundane activities both online and on the ground. It provided a sensorially rich fieldsite for understanding collective identity formations during what has been called the post-truth era. We found these identities combined concern with playfulness and configured science as an internationally open social good. Through allowing the shared expression of this view, the March for Science London supported a momentary collective effervescence focused upon civic epistemology, and an emotional energy that would be later recast around other mobilising frameworks for anti-populist thinking.

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