

Cultural Relations Collection

Making sense of climate change in the digital age

Nina Schuller



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Foreword

The rapid changes currently affecting the Earth's environment amount to arguably the biggest story in human history so far – one that will affect every person on the planet.

The way we tell that story, the language we use and the people we engage will determine our success in minimising and mitigating its effects.

There is little dispute that action to avert catastrophic global heating is essential. But action does not take place in a vacuum. It is the consequence of data, calculation, reflection and the way in which concerned humans communicate.

So cultural relations, the art and practice of international communication as expressed through national cultural assets, has a vital (though largely unexamined) role to play.

As one of the contributors to this collection sums it up: 'Climate change is a crisis of culture.'

The study of cultural relations in the context of climate change – and perhaps more importantly, as a spur to action – is a young field, but one that needs to grow up fast.

This volume of essays commissioned by the British Council is an attempt to survey some of the thinking in the field. We've done this in partnership with researchers from a range of academic backgrounds and disciplines. These new and exciting voices had a brief to provoke and challenge as well as to illuminate – and their essays do just that.

The result is an excellent primer to a variety of approaches from a broad spectrum of authors – and subject matter from 'cli-fi' novels to the meaning of the climate strike movement.

The narratives of myth, religion and history fulfil our need to make sense of the world and our place in it. We urgently need to discover new ways to communicate our present predicament, but I believe all the cultural tools we need for the task are at hand.

The climate emergency has made a single interest group of all people on Earth. So, as well as being a moment of crisis and challenge, the period we are living through has the potential to be a time of unity and common purpose. In that fact, I find great hope.

Advancing as one global community to solve a challenge that is simultaneously paralysing in its enormity and impossible to imagine in its ultimate consequences, has never been attempted before. But that shouldn't stop us trying. Nothing else has ever been so important.

Kate Ewart-Biggs OBE
Interim Chief Executive, *British Council*

The Climate Connection Cultural Relations Collection Special Edition

The following essays are part of a special edition of the Cultural Relations Collection and part of the Climate Connection. You can find out more about the Climate Connection at www.britishcouncil.org/climate-connection

You can find this special edition and other essays in the Cultural Relations Collection on our website at www.britishcouncil.org/research-policy-insight/research-series/cultural-relations

An obtuse triangle: the nexus between digital skills, soft power and climate change mitigation in Georgia

Jessica Gosling

Emergencies, emergences, engagement: cultural relations and climate action

Carlia Figueira and Aimee Fullman

Empowering a world without fossil fuels: a crisis of culture

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Rethinking the unthinkable: what can educational engagements with culture offer the climate crisis?

Charlotte Nussey

Introduction to The Climate Connection Cultural Relations Collection Special Edition

Michael Mikulewicz Glasgow Caledonian University
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Three years ago, the Intergovernmental Panel on Climate Change (IPCC), an international body that brings together the world's leading climate scientists, published what is commonly referred to as the 1.5°C Report, in which for the first time ever the authors set an implicit deadline for decisive climate action. The report recommended reducing global greenhouse gas (GHG) emissions by 45 per cent by the year 2030, or in other words limiting the warming of the atmosphere to 1.5°C compared to pre-industrial levels (IPCC, 2018). Beyond the 1.5°C threshold, report authors warned, lies a world marked by 'long-lasting and irreversible' risks for our ecosystems and societies alike (IPCC, p. 36). This unprecedented clarion call for action was the IPCC's attempt to underscore the seriousness of the global climate emergency and galvanise support for aggressive GHG emission reductions at the international and national levels.

Some climate activists have found hope, or at least a silver lining, in the global COVID-19 pandemic, suggesting that reduced economic activity would dramatically curtail carbon pollution (Balch, 2020). The year 2020 did see a decrease in that respect, but not by as much as was expected (Tollefson, 2021). And while calls for 'building back better' have grown in recent months, the general sentiment is that once the virus is brought under control, economic activity will rapidly rebound along with GHG emissions. Not only that, the virus is also said to have had negative effects on climate action. Travel restrictions caused by the pandemic have made it difficult for members of the global climate governance community (governments, NGOs, international organisations, business, etc.) and for activists to meet in person and work together towards more ambitious climate goals. The

postponement of COP26 in Glasgow to November 2021 is a case in point. Meanwhile, virtual meetings do not seem to be as effective as in-person gatherings (Evans & Gabbatiss, 2021).

That said, with or without a global pandemic grounding most flights and making face-to-face interactions impossible, the world's leaders have over the last three decades sought – with very mixed results – to build consensus around who should reduce their emissions, by how much, by when and at whose cost. In 2015, the Paris Agreement was hailed by some as a break to this impasse, though critics rushed to point out that the treaty had no punitive mechanisms and relied on voluntary contributions by states (called nationally determined contributions, or NDCs). Indeed, the world is currently on track to limit warming to about 2.4°C above pre-industrial levels, a far cry from the 1.5°C goal advocated by the IPCC and most environmental organisations, and that is based on national governments' pledges and targets rather than tangible progress (CAT, 2021).

It is clear that we need an unprecedented level of international co-operation to tackle the climate emergency. However, this co-operation can and should come in different iterations; effective collaboration of governments at the national level may not be sufficient to avoid the irreversible changes the IPCC warned of in the 1.5°C Report. What is needed is a global ethic of care and responsibility for the planet – a cultural change that would enable climate action in all facets of social life.

That is because climate change knows no borders and affects the world's cultures just as much as it affects our natural environments.

There is no single human or non-human on Earth that will be unaffected by the changing climate in one way or another. There is certainly some awareness that 'we're all in this together' among global leaders. After all, the Paris Agreement did away with categorising nations into those historically responsible for GHG emissions and the rest (Annex-I and non-Annex-I countries). Even the motto of the Sustainable Development Goals (SDGs) – 'leave no one behind' – has an unequivocally cosmopolitan ring to it.

That said, even though we may well all be in this together, we certainly are not equal. Different people will experience climate impacts based on where or who they are – seen from this perspective, climate change is a major socio-economic and political disruptor that can exacerbate global and local inequalities, deep as they already are. This is one of the main concerns of climate justice scholars and activists, who argue that, among other things, we need to refocus the climate debate and action towards those on its frontlines – historically marginalised communities and individuals, and countries that are disproportionately exposed or vulnerable to climate impacts despite having done little to cause it.

This is where the role of cultural relations becomes crucial. While there is no universally supported definition, cultural relations can be said to refer to 'interventions in foreign cultural arenas with the aim of enhancing intercultural dialogue and bringing about mutual benefits connected to security, stability and prosperity' (Gillespie et al., 2018, p. 5). Writing during the height of Cold War tensions, JM Mitchell (1986, p. 1) argued that cultural relations possessed great potential for fostering global stability and that 'alternative

forms of international relations' lay beyond traditional diplomacy. Three decades on from the end of the Cold War, the importance of cultural relations in managing and mitigating global issues is more important than ever. It is difficult to imagine developing a global ethic of planetary care without intercultural dialogue and shared environmental and social values among the world's powerful.

However, cultural relations involves a range of actors and institutions beyond just governments, which has always set it apart from cultural diplomacy (Mitchell, 1986, p. 2). Recently, cultural relations has been harnessed in relation to a range of different issues and fields of study. There has been a 'cultural turn' in international development (Singh, 2019), English language assessment has been approached through the lens of cultural relations (O'Sullivan & Patel, 2019), and the continuing global COVID-19 pandemic has raised debate as to the implications of a shift from physical to digital cultural relations (Kerr, 2021). Despite the noted need to consider the role of culture and creative approaches to addressing climate change (Gabrys & Yusoff, 2012), efforts to address the climate emergency have seldom been considered from the vantage of cultural relations.

These emerging perspectives suggest that cultural relations has the potential to foster mutual understanding, trust and co-operation in the field of climate action. Whether rooted in exchanging global citizens' lived experiences of climate change or promoting cross-cultural co-operation in raising climate awareness and ambitions, cultural relations offers many ways to positively contribute to our planet-wide struggle to contain climate change and its impacts. However, precisely because climate change is riddled with international and

sub-national inequalities in terms of who caused it and who will be affected by its impacts, cultural relations must remain an explicitly reciprocal activity between equal partners (Gillespie et al., 2018). Cultural relations is different in this regard from soft power or cultural diplomacy, the pursuit of which can be problematic, and accused of evincing neo-colonial undertones. A cultural relations approach that is guided by principles of trust, reciprocity and equity – an approach embodied by climate justice – can act as a vehicle for sharing knowledge and experiences of climate impacts and injustices.

The six essays to follow exemplify how this can be achieved and reflect on the role cultural relations has had in shaping climate change discourse, activism and praxis. We now turn to these insightful contributions.

Overview of essays

In their essay on cultural relations and climate action, Carla Figueira and Aimee Fullman argue for the need to avoid distant, apocalyptic visions of climate change. Instead, they suggest telling ‘better stories’ about where we want to go and the sort of world we want to live in. They argue that cultural relations, and cultural relations organisations, can play a vital role in shaping this new framing of climate change. Figueira and Fullman discuss emerging ecosystems of care, bolstered since the start of the COVID-19 pandemic, and how a caring paradigm can be linked to cultural relations, with its focus on expanding shared knowledge, understanding and trust. Further, their essay argues that cultural engagement serves as a useful point of participation in climate action, focusing on the greening of cultural relations organisations, diversifying cultural engagement interventions, elevating programme evaluations and learning by

design. They argue that cultural relations is an underutilised resource in addressing the climate emergency, and cultural relations organisations have an important part to play.

Charlotte Nussey considers the ways in which educational engagement with cultural relations offers lessons for the climate emergency, including new ideas and ways of talking and listening. Like other essays in the collection, Nussey argues that the climate emergency cannot be addressed by technical responses and innovations alone, but requires a socio-cultural response, inclusive of culture and education. The essay suggests three important connections and shifts in knowledge that are needed in (higher) education relating to the climate emergency. These are:

1. the need to break down hierarchies of knowledge and ways of knowing
2. the need to create deeper, transformative and non-extractive relationships between higher education institutions globally
3. new links between higher education institutions and the societies they are part of, ensuring that the former learn from the latter.

To better make these connections, Nussey proposes four interconnected mechanisms, drawing on intercultural engagement: art as anticipatory memory, language matters, protest as pedagogy and just participation. The essay spotlights the work of the Transforming Universities for a Changing Climate (Climate U) project, which shows the important ways that higher education institutions in the Global South contribute to tackling the causes and impacts of climate change. This example highlights the important intersections that are taking place between activism and scholarship, and touch on culture, education and climate justice.

Chloé Germaine Buckley and Benjamin Bowman discuss the School Strike for Climate, the global movement initiated by Greta Thunberg in August 2018. Rather than consider the strikes as a protest movement for a large-scale shift in climate policy, they suggest viewing them as a form of global cultural exchange. They highlight the role of three themes to make this case:

1. the role of young people's positionalities in building relationships and global solidarities
2. young people's repertoire beyond attempting to shift climate policy into wider civic activity such as intergenerational care or mental health support
3. the functioning of the strikes as a polyphonic 'text' that invites dialogue, incorporating a multitude of voices in a variety of forms.

In their essay, Buckley and Bowman interpret the efforts of young people not only as a protest against the world as it is today, but as a process that envisions the world as it could be, with all the struggles that come with bringing this view into being. The authors draw on a range of materials produced by young people, from informal protest signs to songs.

Sam McNeilly argues that climate change cannot be overcome by technological developments or engineering advances alone, because it is in fact a crisis of culture. McNeilly addresses the relative failure of communicating climate change and roots his work in the 'energy humanities' – an emergent field of scholarship concerned with the impact of the dominant forms of energy on a given society. He argues that effectively communicating the climate emergency requires increased attention to what drives it: the culture of fossil fuels. McNeilly argues

against a simple replacement of fossil fuels with renewables, in favour of an ethical energy transition that involves also understanding and transforming existing cultural practices. Cultural relations can serve to ensure justice is central to shifts away from fossil fuels, and in making this point, McNeilly draws on a variety of cultural outputs, including American naturalist novels, the diary of environmental activist Ken Saro-Wiwa, and the photography and documentary work of Edward Burtynsky. As a post-fossil fuel world still exists in the realm of the imaginary, McNeilly posits that cultural and artistic forms offer opportunities to imagine routes to a just transition and a different kind of world.

In her essay on climate knowledge in the digital age, Nina Schuller invites the reader into the world of the web. As she argues, new communication technologies may be a double-edged sword – stretching outwards and bringing people closer together or being used as a vehicle for promoting certain interpretations and imaginings of the world over others. Schuller explains how digital encyclopaedic knowledge is created and moderated, using Wikipedia as a case study. She notes how our knowledge of climate change is subjected to the politics of translation on the web, with certain interests holding more influence by virtue of digital access and colonial legacies. In this context, Schuller discusses how non-Western knowledges often give way to Eurocentric epistemologies, despite some efforts by media giants like Google and Wikimedia itself to rectify this inequity. The politics of climate knowledge production on the web (and the cultural relations embedded in and shaping this process), Schuller argues, have important implications for global climate action. If generated in a top-down manner, climate knowledges and discourses can contribute to

'disinterest, disengagement and disaffection' at the local level, complicating our prospects for mitigating and adapting to the impacts of climate change.

In her essay, Jessica Gosling discusses the 'obtuse triangle' of unusual suspects: climate change mitigation, soft power and digital skills, using the nation of Georgia as a case study. She argues that digital skills, which she sees as 'vital instruments of soft power', are of crucial importance for building a low-carbon economy and prosperity in the south Caucasian country. Gosling argues that given that climate change is a global emergency, the exchange of information and technology between different cultures and regions of the world becomes crucial for climate mitigation. More specifically, she notes that combatting climate change will require solutions and connectivity afforded by digital and entrepreneurial skills which may not be sufficiently funded and developed in some regions of the world. A related concern here is the unequal access to digital education which limits opportunities for some people to effectively participate in the rapidly digitalising economy and benefit from the wealth that it generates, not to mention being able to engage in discussions on desirable climate change mitigation strategies. Gosling discusses these linkages based on interviews conducted with Georgian experts with regard to the creative industry in the country.

Taken together, the authors of the essays in this collection demonstrate how cultural relations can contribute to the goal of more equitable, intercultural climate action. They offer insights into diverse facets of society, economy and culture and how they can be mobilised for our common good. Our contributors represent different career stages – PhD students, postdoctoral researchers, lecturers and professionals – and different academic and professional disciplines, embodying the diversity of perspectives needed to combat the climate emergency, and do so before the deadline set by the scientists at IPCC.

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Making sense of climate change in the digital age

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Imagined worlds

New communication technologies hold the potential to stretch outwards, connect together people's thoughts, and produce new imagined space-times. Benedict Anderson (1991) describes how nations were imagined into being alongside the arrival of national languages and their standardisation through print capitalism. Today, the architecture and languages of the web are interwoven into communication, educational, economic and political systems across the world. Over half the world's population is using the web. This rises to 66 per cent of 15- to 24-year-olds in developing economies, and 69 per cent of that age group globally. In recent years the percentage of web users producing content in English has shrunk to around 25 per cent, with rapid growth in the use of other languages such as Chinese, Spanish and Arabic (Clement, 2020). Millions of people in the Global South, however, only have access to the web through Facebook's restrictive Free Basics project (Northias, 2020). Access and use is also influenced by location and socio-demographic factors such as gender and age (International Telecommunication Union, 2020).

Technologies cannot be viewed as politically neutral constructs if, as Anderson proposes, they are used to imagine communities. Digital social networks can tend towards reinforcing existing offline contacts, and contact between people with similar characteristics (Kwak & Kim, 2017). The web could hold the potential for contact that goes beyond this, but it is not clear how new social technologies have been constructed to avoid reproducing meetings of the past. Many of those meetings were informed by the beliefs that one community had the automatic right to reproduce itself in the other, exploit it or attack it. Such

communities believed in their absolute sovereignty and so were incapable of acknowledging the sovereignty of the other. They reproduced this understanding in the technologies of the time, including archiving and mapping (Anderson, 1991).

It would be expected, however, that technologies developed in contemporary democracies could produce meetings capable of supporting equality of participation in shared imaginings, including of a world capable of sustaining life. Such meetings would be highly dependent on the establishment of trust, and translation across languages. It has been evidenced that climate change discourse intertwines diverse scientific representations and their continual translations by a plurality of non-local actors with the perceptions, beliefs and vocabularies of local communities (Brüggemann & Rödder, 2020; De-Wit et al., 2018; Dürr & Pascht, 2017). In addition, it has been found that the acceptance and use of scientific knowledge on climate change is highly dependent on trust (Smith & Mayer, 2018; Lacey et al., 2018). Relatively little attention, however, has been given to how the automatic knowledge-making systems of the web could be interacting with climate change discourse, trust, knowledge and action. This essay seeks to begin to address this, with a focus on technologies initially developed in the West.

The fabrication of the web as an encyclopaedia

The encyclopaedia has been used by various cultures to connect together representations of the world. The ordering of such connections and the degree to which the representations have been viewed as knowledge, however,

have been open to contestation (Loveland, 2019). Contemporary web technologies now seek to generate structured knowledge through connected representations. These technologies include the semantic web, linked data and knowledge graphs. Relatively few people are familiar with, or can use, these technologies, but those able to use them have integrated them into a system where associated digital representations can be automatically processed by machines.

Trust on the web is technically established through its architecture and network connections, while semantic vocabularies such as Schema.org (initiated by Google, Bing, Yahoo and the Russian platform Yandex) act as a common language between applications. Schema.org began as a project to create a shared, public resource, but increasingly companies such as Google have inhabited and used it to describe their business languages (Cagel, 2018). These semantic vocabularies and relations of trust (opaque to outsiders) enable web applications to come together in a particular structure – that of an encyclopaedia. Search engines, such as Google, act as the index of the web. Wikipedia and other digital platforms (of governments, academic institutes and traditional media providers) act as its prioritised pages and generate its system of cross-referencing. Together these form the fabricated, self-referential representation of reality known as the web.

Knowledge is increasingly automatically generated and distributed across the web through 'knowledge graphs'. Data for knowledge graphs is taken from datasets that form part of the self-referential encyclopaedic structure of the web. These datasets are viewed as trusted sources, and their data

structured for machine use. This includes data originally taken from user-generated content sites. Such sites are viewed by technologists as providing a constant flow of up-to-date crowdsourced meaning generated by web users. This is harvested and structured so it is machine readable and can automatically generate answers to queries through processes of inference. Google's knowledge graphs have been shown to draw heavily on data from Wikipedia and it has been demonstrated that levels of traffic to the Wikipedia pages are likely to be influenced by Google technologies (Vincent et al., 2019; McMahon et al., 2017). Data from Wikipedia and its sister projects (Wikipedia and DBpedia) is also being integrated into knowledge graphs, fact-checking systems of social media giants, AI training (Bukhari et al., 2018; Matsakis, 2018) and scientific research (Waagmeester et al., 2021; Jatowt et al., 2018). Some Wikipedians express concern at how commercial platforms make use of their site, and the narrative stops short of stating that the content of Wikipedia and its sister projects are the truth. Instead it is recognised that many concepts are disputed or uncertain (Vrandečić, 2019). Its claim of trusted sources, neutrality, accessibility and generous copyright licences, however, have led the tech industry to adopt it as the public voice of authority in the digital age. Such a voice has been viewed as necessary to combat the spread of intentional misinformation, but has also become entwined in regional and national interests. For trust is key in enabling data and knowledge transfer (Calmet & Marret, 2013).

Global knowledge meets the politics of translation

The Wikimedia Foundation states that its mission 'is to empower and engage people around the world to collect and develop educational content under a free license or in the public domain, and to disseminate it effectively and globally' (Wikimedia, 2021). To fulfil this mission Wikimedia projects, including Wikipedia, must be seen to draw on knowledge from all cultures. Multiple language communities on Wikipedia are, therefore, core to its mission and are clearly recognised on the platform (Wikipedia, 2021a). To develop the capacity for universal translation of knowledge, Wikipedia articles across language communities are mined for interlanguage links (linking the representation of a particular entity such as 'climate change' across all language communities). These are then transferred to its sister project, Wikidata, which is a knowledge graph connected to other so-called 'trusted sources' on the web. Wikidata has been referred to both as a Rosetta Stone and Tower of Babel, as it aims to enable the translation of all languages with the support of machines. Within Wikipedia, the updating of a Wikidata item can result in updates of articles across multiple language communities (Turki et al., 2019). Wikidata also commands the attention of commercial and state interests who are attempting to develop universal translation systems. It is here that the Wikipedian ideal of global knowledge becomes particularly intertwined with other agendas.

The ideal of universal language and knowledge can be found in the work of philosophers such as Leibniz, who have influenced the technical sciences. Within a political space, however,

such an ideal is not automatically viewed as benign. The translation of languages has previously engaged with a range of politics, from that of colonialism to cold wars. Hsieh (2020), for example, describes how enslaved interpreters were once used to further the interests of colonialists, and co-opted by them. Ramati and Pinchevski (2018) highlight that machine translation emerged from America in the context of the Cold War – with the 'other' viewed as an enemy to be understood and defeated. Later, with the move away from using 'rules' and towards applying statistics to human languages, machine translation models became more associated with conceptualising others as potential partners and competitors. Ramati and Pinchevski, however, argue that this reduces all relations to those of global capitalism and point out that Google Translate continued, for some time after switching to statistical modelling, to rely on English to serve as a pivot to all other languages.

Both Hecht and Gergle (2010) and Miquel-Ribé and Laniado (2018) – undertaking research on behalf of the Wikipedia Diversity Observatory – found that the Wikipedian ideal of global consensus was not held up by the contents of multiple Wikipedia language editions. The researchers found only 0.12 per cent of all concepts included in articles were covered in all the language editions in their sample. Even in what they saw as a best-case scenario, almost 70 per cent of concepts remained unique to a specific language. Many concepts were specific to localities, or varied across different localities. Miquel-Ribé and Laniado (2018) reviewed the content of 40 language editions taking account of geolocation, keywords, categories and links. They found that around a quarter of the content of each language edition was culturally specific to that edition, although there was some evidence

of clustering of content across certain language editions. This was often related to geographical closeness between cultures.

There is the possibility, however, that the traditional media services of each language community are interacting with Wikipedia cultural concepts. The web is heavily reliant on traditional media channels for updated information. This leaves it vulnerable to reproducing the nationalised space-times of those media. A big data study of tweets about climate change (Veltri et al., 2017) found that the majority of web links were from the mainstream news. Wikipedia articles are often triggered by new events, and so editing can intersect with mainstream news channels (Twyman et al., 2016; Keegan et al., 2013). Case studies of Wikipedia have found that many of the sources of citations are from traditional media platforms, suggesting that editors are also integrating content from these platforms into articles (Smit, 2018; Page, 2018). Page (2018) has demonstrated how English language and Italian Wikipedia articles on the Meredith Kercher murder trial strongly interacted with national stereotypes generated by the traditional media in the UK and Italy. Edit wars on Wikipedia have been found to arise when editors from a language community express national interests and these come into conflict with views expressed by other language communities (Kapráns, 2016; Dounaevsky, 2013). Some evidence suggests that such conflicts engage with the use of traditional media sources representing the perspectives of different nation-states (Smit, 2018) and there may even be direct interventions from state agencies (Saul, 2014).

Intensive editing by editors with strong national and politically ideological perspectives and those resisting such

views may help to explain why a small percentage of editors have been found to be responsible for much of the activity on Wikipedia (Matei & Britt, 2017; Graham et al., 2015, p. 1,160). Wikipedian editors who generate large numbers of edits aligned with core Wikipedian principles can climb up the Wikipedia hierarchy. These editors are given additional affordances such as placing protections on highly controversial articles that are the subject of edit wars. Wider structural inequalities that interact with access to, and use of, the web are also evidenced in Wikipedia editorship, particularly in terms of age, gender and geolocation (Galvez, 2018; Roued-Cunliffe, 2017). Wikipedia has over 300 different language projects, but more than half of these only have ten or fewer active contributors (Vrandečić, 2019) and there are thousands of languages internationally. Graham et al. (2015) found that the tiny percentage of edits generated from developing economies such as Africa tended to focus on editing about wealthier nations rather than their own local regions. A study of Wikipedia articles on national histories found that these covered the entire timelines of large European economies, as well as Australia and the USA, but only a limited number of decades in the case of African countries and the island states of Oceania (Samoilenko et al., 2018).

Shared concepts of climate change on Wikipedia

Wikipedia's lists of controversial issues highlight English language articles that have been edited in a way that concerns the Wikipedia community (Wikipedia, 2021b). Many of these are focused on nations and their associated beliefs, although articles about the environment, including global warming,

are on also on these lists. Wikipedian editors volunteer to keep a constant watch on the editing of controversial articles, and evidence suggests intensive editing has been used to reduce controversy in Wikipedia articles about anthropogenic climate change (Kaufman, 2020; Esteves Gonçalves da Costa & Cukierman, 2019). By 2014, the English language article on global warming had been broken down into subsections covering political, scientific and media discussions, with climate change controversy described as a media discussion (Weltevrede & Borra, 2016). Esteves Gonçalves da Costa and Cukierman (2019) found that the Portuguese language edition of global warming (*Aquecimento global*) was mainly supported by academic and scientific institutional articles and reports, although around 20 per cent of the sources were press articles. The researchers noted that scepticism of anthropogenic climate change had once been represented on the page, and it was only until around 2010 that the article came to broadly reflect the latest IPCC report conclusions. Even after 2010, however, the researchers found that related articles in the Portuguese edition, for example on the greenhouse effect and Kyoto Protocol, were not kept up to date in the same way as the article on global warming. Climate change scepticism could still be found in some Wikipedia articles in 2014 (long after scientific consensus had been established), although generally this had been addressed by 2017. The researchers concluded that it was very difficult to arrive at a definite understanding of whether Wikipedia evidenced any toleration of climate change scepticism for there were many paths that could be taken to, and through, the site. Paths, for example, might take readers to little-accessed articles.

There is evidence that Wikipedia tries to take account of such paths. Trails of hyperlinks and redirections on Wikipedia seem to reflect changes in attitudes and terminologies across different times and locations. The term global warming has become associated in the English language communities with political narratives that deny anthropogenic climate change. As of 30 March 2021, searching Google for the English language term 'Global Warming' redirected web users towards the English language article on 'Climate Change'. Similarly the term 'climate change scepticism' was once used on the English language Wikipedia, but web users who now search for this term are redirected to an article on 'climate change denial'.

Issues, however, remain on the site as a whole. The English language article on climate change was linked to articles on global warming in other languages, due to its association with the Wikidata item for global warming. In another case, a Russian language edition article on pollution (*Загрязнение*) included repeating statements within its edit history which told readers not to worry (Wikipedia, 2021c). A banner across the top of an article on pollution in mainland simplified Chinese (Wikipedia, 2021d) stated that it was recommended this be incorporated with another article on public hazards (Wikipedia, 2021e). Clicking on the hyperlink for this article took the web user into an article entitled 'Pollution' in the same language. This included a headline banner stating that it was mainly about Japan and content focused on disasters in Taiwan and Japan (Wikipedia, 2021f).

Concise versions of knowledge graphs¹ are publicly visible alongside some search engine results on 'Climate Change'. These are based on constantly updated information

about all searches undertaken by users who have searched on 'Climate Change'. In the case of major search engines such as Google and Bing, associated entities tend to be Wikipedia articles and related data. As of the 30 March 2021, searching for 'Climate Change' on Google resulted in a knowledge graph representation highlighting several climate change games, and further links to Wikipedia articles, including on immigration, population, other environmental issues, the economy, money, government and elections, alternative energy sources, and climate engineering. Searching the Russian language term for global warming (Глобальное потепление) returned the web user to the same knowledge graphs on Google. Searching in Urdu (حرارت_عالمی) and Egyptian Arabic (دفا_كوكبي), however, returned no associated Google knowledge graphs.

The expansion of Wikipedia into emerging economies

Wikimedia, and Wikipedia's senior editors, are highly aware of issues of controversy and under-representation on the Wikipedia site. They also know that population growth is taking place where it has the fewest users. Wikipedia has initiated a number of interventions in response to these issues. This has mainly been through deliberately adding new articles to the site and attracting new editors. The platform is currently seeking to extend Wikipedia to under-represented groups, including in Asia, Africa, the Middle East and Latin America (Maher, 2017; Wikimedia, 2017). The entwined technologies of Google and Wikipedia have also gone

into partnership to increase the number of articles written by local editors in languages under-represented on Wikipedia (Matsakis, 2019; Gomes & Fuller, 2019). As Matsakis (2019) has highlighted, this provides insights that are useful to Google in its development of Google Search – which is highly reliant on understanding language (Nayak, 2019; Vaughan & Chen, 2015). Google and other digital platforms are also likely to be aware of findings from market research companies that many people are resistant to marketing in other languages and prefer to make purchasing decisions in their native language (DePalma & O'Mara, 2020).

According to a recent *Economist* article (2021), the number of active Wikipedia editors working in languages spoken in the richer half of countries in the world has been in decline over the past decade, but active editors in other countries, including in Asia and Africa, have more than doubled. Although the number of editors in the Global South has risen since 2015, Dittus and Graham (2019) found that most of the Wikipedia content for Africa, Central and South America, and many South Asian countries is written in non-local languages (in many cases English). Broadband connectivity is implicated in this. Issues have also arisen in the development and use of translation technologies on Wikipedia. Within the Wikipedia–Google partnership, Google Translate was offered to local editors as part of the Wikipedia content translation tool. It has been reported, however, that this initially resulted in some poor translations, as well as concerns expressed that these could lead to distrust between the Wikimedia Foundation

1. Only publicly available data is open to being analysed in the following, skewing attention towards freely accessible sites such as Wikipedia and Google. It is likely a far more complex picture would emerge if further data, including that from other organisations and geolocations, could be analysed.

and language communities beyond the English edition (Wilson, 2019). Constraints were then placed on the use of this tool by the Wikipedia community. Both Wikipedia and Google now run language diversity projects (van Esch et al., 2019; Miquel-Ribé & Laniado, 2018), and increasingly it is recognised that variations across Wikipedia language editions represent diversity of views rather than error or systematic bias as previously suggested (Miquel-Ribé & Laniado, 2018). Google is phasing out English in its role as a statistical bridge between other languages and instead developing artificial neural network translation using its own linguistic construct as a base. Ramati and Pinchevski (2018) and Hsieh (2020), however, suggest this may merely place more power in Google's hands. Hsieh (2020) also points out that languages can be used by more than one culture and asks how technologies such as neural networks could acknowledge this and the cultural differences it entails.

A special African task force has been set up on the Wiki Project on Climate Change, and the project looks at those disproportionately affected by climate change (Wikipedia, 2020g). As of 30 March 2021, regions in the Global South were mentioned several times in the English language edition of the Wikipedia article on climate change (Wikipedia, 2021h). The vast majority of citations, however, were from the Global North or international institutions, particularly the IPCC. In providing a mainly global view the article gave limited recognition of regional differences in terms of climate problems and possible solutions. Reference was made to a past industrial revolution, but industrial revolutions are still taking place in many emerging economies. There were language editions of the article on global warming in some, but by no means all,

major languages spoken in Africa, including the Niger-Congo languages of Swahili and Hausa (Harvard University). These articles (Wikipedia, 2021i and Wikipedia, 2021j) were shorter than the English language edition and mainly drew on Western or international sources. Recently there have been events in India and Africa which have focused on generating climate change content on Wikipedia, and rural and female editors have been particularly encouraged to join in (Wikipedia, 2021k). Adverts for one of these events, however, highlighted a need for English language and that most editing would take place on the English language edition of Wikipedia (Future Climate for Africa, 2020).

Other regional encyclopaedias

Russian and Chinese interests were engaged in the early development of the common semantic vocabulary project Schema.org. The Russian platform Yandex was one of the main partners for the project, and the entire Schema.org was translated into Chinese and also adopted by Russian interests (Zaino, 2013). Knowledge graphs and translation technologies have been developed elsewhere, including China. There is, however, limited translated literature available in the West on such technological developments in other regions. This means that only a partial picture is available. Wikipedia has been blocked in China for some years, but a number of Chinese institutions have constructed multilingual knowledge graphs drawing on the Chinese language Wikipedia project. Instructions on how to make use of knowledge graphs based on languages other than English (particularly Chinese) have been promoted as part of the Chinese global investment programme One Belt, One Road, which has been associated with geopolitical goals. In the case of the

Belief-Engine knowledge graph, developed in China, belief values are assigned to the data (Wu et al., 2018). China operates its own self-referential regional web, with the Chinese search engine Baidu as its index and the Chinese online encyclopaedias (Baidu Baike and Hudong Baike) providing its prioritised pages (Gustafsson, 2019). Russia initially collaborated with the West on the semantic web (Wikipedia, 2021f; Zaino, 2013), but evidence suggests that many edit wars on Wikipedia have intersected with Russian interests, and recently Putin has stated a preference for an electronic form of the new Great Russian Encyclopaedia over Wikipedia (Wood, 2019).

Conclusion: sharing meaning in the digital age

There have been numerous examples of nationalist encyclopaedias, including those expressing imperial, fascist and Soviet perspectives of the world (Doody, 2010). It has also been noted that geographical articles overtook scientific articles in hard copy encyclopaedias of the 19th century onwards, perhaps driven by nationalism (Loveland, 2019, p. 184). As a result of this, those working on developing hard copy encyclopaedias developed the understanding that encyclopaedic ordering and content could interact with, and potentially restrict, cultural knowledge. It is unclear, however, if those who initially developed the Wikipedia and web technologies shared this understanding.

Commentators and scholars from across the world have begun to accuse both the West and China of digital colonialism (Nothias, 2020; Hicks, 2019; Kwet, 2019; Birhane, 2019). Some commentators (Das, 2020; Bhattacharya,

2020) have argued that this is a colonialisation that reproduces imperial colonialisation of the past, and that digital technology and infrastructures should be developed and controlled by their own nation-states. Hicks (2019), however, notes that some of her contacts in India and Indonesia express scepticism about their government's narrative of digital colonialisation and are more concerned about their own government's access to their sensitive, personal data. Couldry and Mejias (2019) argue that a new form of colonialism (data colonialism) is being practised by the USA and China which operates on both home populations and at a global scale. Responses to digital colonialism have been put forward by several authors. Kwet (2019), for example, highlights the need for technologies that are decentralised at every layer, including ownership of the infrastructure, the design of the architecture, software and hardware. He also calls for educational and funding systems that support the localisation of technologies.

Few investigating digital colonialism have specifically picked out either semantic technologies or Wikipedia. It has, however, been argued that Western values – particularly Western scientific rationality – have kept the same privileged place on Wikipedia as they have long held in encyclopaedism, allowing for little epistemic diversity (Esteves Gonçalves da Costa & Cuikerman, 2019). Bouterse and Sengupta (2018), now ex-employees of Wikimedia, ran an event on decolonialising the web and went on to become significant figures in a project called Whose Knowledge aimed at decolonialising the internet. The project, supported by Wikimedia, focuses on digital inclusion and greater representation in the content of the web of women and those in the Global South. This includes

encouraging those from marginalised groups to add content to Wikipedia. Earlier this year Wikimedia announced a new commercial product called Wikimedia Enterprise. This is aimed at more clearly defining how the mission of generating free global knowledge interacts with commercial platforms. It is also hoped that it will generate funds to build better products for emerging economies (Techtelegraph, 2021). In addition, Wikimedia supports the Contract for the Web (World Wide Web Foundation, 2019), with its focuses on digital and human rights, sustainable development goals, addressing risks created through technologies, consultation with the ‘full breadth of communities’, promotion of local languages, and empowerment of a diverse set of users.

Lacey et al. (2018), however, argues that the re-building of trust must be enabled through the acknowledgement of errors by core stakeholders and ongoing actions to correct such errors. There are, however, few acknowledgements of error in the world of the technical professional. Rather the focus is on driving forward ‘the mission’. This mission tends to focus on getting the rest of the world online so that free, global knowledge can be generated and shared, but does not clarify how this is to be accompanied by an international drive towards the broader educational, economic and social inclusion needed for informed digital participation. Nor is there obvious commitment to systematically identifying and addressing the underlying problems of a self-referential web built on technical-commercial languages and understandings of provenance, authority and trust.

The web, of course, is not open to being deconstructed and reconstructed overnight.

It is built up of many layers – with a weight of applications on top. It remains vulnerable to cyberattack, fake news, abuse and extremism, at a time when there are increasing public and political calls for greater vigilance and defences to be put into place. This vulnerability, however, may partially stem from technical-commercial forms of language and trust (e.g see Artz & Gill, 2007) that offer limited scope for expressing care or hospitality towards others, including those who are yet unknown. Rather semantic languages and forms of trust (built on a combination of logic and commerce) enable those who have already accumulated credibility (Routley, 2019) on self-referential, regional webs to cosy up and extract meaning from others. Digital inclusion, rights and new content from women and people in the Global South (including in other languages) can only sit on top of this new social contract – which has been created without wider democratic debate. Without the capacity to quickly resolve the underlying problematics of the web, it is unclear how it can be used to build new relationships of trust and translations across local communities in both the Global North and South. Rather there is a real risk that it will merely generate top-down discourses and knowledge on climate change that leads to disinterest, disengagement and disaffection at local level.

Case studies have challenged the assumption that top-down climate knowledge simply results in environmentally friendly behaviour. Rather, there is a need to recognise how discourse and knowledge emerges, and is used, in local contexts (Brüggemann & Rödder, 2020). Recent case studies from around the world suggest that traditional community ties continue to be the basis of trusted sources in many localities. Family members, friends and

neighbours tend to be trusted above faraway organisations – with local media outlets or NGOs situated in between (Brüggemann & Rödder, 2020). Scholars focused on the development of general discourse on climate change have shown that perceptions of the climate entwine with local belief systems, perspectives of globalisation, and localised social and environmental changes. Each community develops their own interpretations of climate change and expresses this through local vocabularies and connections (Brüggemann & Rödder, 2020). Added to this, interdisciplinary scholarship has clearly demonstrated that perceptions of spacetime are culturally negotiated, and interact with local languages and their narrative structures (Pérez & Tavits, 2017; Perrino, 2015; Baynham, 2015). Buzsáki and Llinás (2017) point out that the grammars of many languages do not include past or future tenses, but the people using these languages still have their own ways of ordering and creating relationships between entities. Certain indigenous cultures view the environment as part of their communal intelligence (Brüggemann & Rödder, 2020), and Young (2019) describes how Inuit knowledge does not rank spiritual, empirical, kin-based, community or political forms of knowledge against one another. Rather it constantly develops and draws on all of them to adapt and survive one of the harshest environments on the planet.

In view of the above, arguably funding needs to be retained for offline interventions delivered by human boundary-spanners capable of working with nuanced understandings of trust and vocabularies (Smith & Mayer, 2018). This is particularly important in scenarios where there is already damaged trust, including due to legacies of colonialism. These boundary-spanners

would need to be capable of constantly reconsidering and rewriting their own social understandings as they interact with the diverse thoughts of others. In the case of traditional communities, Brüggemann and Rödder (2020) emphasise that climate change science should not be communicated as a modern substitute for religious beliefs. Rather they suggest that a local interpreter would be better placed to potentially integrate a scientific perspective with belief systems of local communities. Although such suggestions have been made in relation to traditional communities in developing economies, the same recommendation could be made for all local communities (including those in the Global North) where there is limited trust in scientists and scientific climate change knowledge. Both Young (2019) and Brüggemann and Rödder (2020) note examples of localised cultures that do not decide between the competing knowledge systems of local cultural beliefs and scientific understandings, but rather can draw on both of them – depending on the context. Hsieh and Kramer (2021) state that translators working on the ground can create new points of reference and meanings, and reshape both the culture of the source language and culture(s) into which it is translated. These interactions would quickly become distorted, and trust damaged, if such boundary-spanners viewed their main purpose as automatically enabling the commercial extraction of knowledge from others. Boundary-spanners could also work with communities to help them identify what actions are likely to be most effective locally – both in terms of mitigations and local social acceptance. Climate change discourse and knowledge making must be open to decentralisation, and then any scaled-up knowledge, within a democratic framework, can be built from the bottom up.

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Concluding remarks to The Climate Connection Cultural Relations Collection Special Edition

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The 2021 United Nations Climate Change Conference (COP26) will take place in Glasgow, the 'second city' of the British Empire, and be hosted by the UK, the birthplace of the modern fossil economy. This moment therefore provides pause for looking back at the historical roots of the current global climate emergency. Since 1995, with the notable exception of 2020, the COP has provided a vital opportunity for global leaders and decision makers to meet and deliberate on how to jointly govern our common atmosphere. Yet the COP is much more than just a gathering of high-profile figures. The deliberations and decisions made at the COP are a result of and testament to the commitment of thousands of people – scientists, public servants, administrators and others – who are hard at work behind the scenes in between the annual COP meeting. After all, there is only so much progress that can be achieved during the two weeks that the COP tends to last. The biannual Subsidiary Bodies meetings and the Intergovernmental Panel on Climate Change (IPCC) process are perhaps the clearest examples of these crucial interactions constantly taking place in the background. These backroom meetings, conversations and exchanges of information between state delegations, international organisations and the United Nations Framework Convention on Climate Change (UNFCCC) Secretariat all depend on mutual trust, understanding and observance of certain rules. In essence, they are cultural relations.

Similarly, it is not only public officials and diplomats that gather at the COP. The global climate is too important to be left to state governments and international bodies alone. That is why each COP invariably spurs a blossoming of civil society activity both in the

run-up to and during the conference itself. Marches, workshops, meetings, sit-ins and 'die-ins', speeches and many other forms of civic engagement (and sometimes disobedience) are offered during various side events and alternative summits organised by the likes of the Climate Action Network, 350.org, the Indigenous Climate Network, the Climate Justice Alliance and Extinction Rebellion. These bring together activists, academics, policymakers, business leaders and other members of the public, often with the explicit goal to further the principles of climate justice and human rights. These, too, are cultural relations.

What this means is that global climate governance is actually underpinned by cultural relations. If we want to address the planetary emergency of our atmosphere, we will need to rely on cross-cultural exchanges to foster mutual trust and understanding – not just during COP meetings, but throughout the next decade or so, which according to the IPCC will be absolutely crucial in determining the extent of irreversible changes to the Earth's climate system. In other words, we argue that the climate emergency is, in many ways, also a cultural emergency. It is a common misconception that the deployment of technology, funding and science will do the trick to solve the climate conundrum. In reality, these are just tools at our disposal – cultural relations can help us use them both more effectively and equitably.

Indeed, the sticking points of global climate negotiations – beyond the usual and more technical bickering over access to funding and technology – have long been about the historical responsibility of certain countries for emitting the bulk of greenhouse gases. These countries, like the UK, are

predominantly in the Global North, meaning that international debates often descend into arguments over the compensatory or corrective measures these countries should take given the disproportionate effects of climate change impacts on countries in the Global South. The right to development of many countries in Africa, Asia, Latin America and the Pacific is seen as a *sine qua non* for their governments, while leaders from the Global North insist that this development must be rooted in sustainability rather than focused on economic growth alone (which is not to say they do not often pursue this latter strategy, themselves). From this complicated dynamic emerges a picture of global inequality, not simply as part of a North–South divide, but also within regions and countries. With these inequalities, climate justice emerges as an important goal for making international climate governance more legitimate and effective.

The question this collection of essays has tried to answer is: how could cultural relations contribute to solving the seemingly unsolvable impasse when it comes to addressing the climate emergency? If, as we argue here, the success of the UNFCCC at least partially depends on the extent to which cultural relations can foster a climate [sic] of trust and mutual understanding, thus helping to resolve the issues of global climate injustice, then the arguments found in this collection's six essays can point us in the right direction towards resolving the thorny question of climate inequity and injustice. Below, we tease out how each of them does so.

Carla Figueira and Aimee Fullman's contribution approaches issues of justice in at least two different ways. First, they argue for cultural relations and co-operation that are

'fair, inclusive and diverse', recognising that national cultural institutes often carry colonial or imperialist baggage that needs to be openly recognised and addressed. This does not only refer to issues of climate change. The authors invoke the global COVID-19 response as an example that lays bare the long-standing inequities between wealthy and poorer nations when it comes to access to financial, technological and cultural resources. Seen in this way, the pandemic offers a lesson on how not to address a planetary crisis. Second, Figueira and Fullman touch on the issues of intergenerational (climate) justice, observing that much of the climate change programming in the West is aimed predominantly at young people, whose lives are bound to be most impacted by climate change in the long term. However, they caution against a limited, unidimensional strategy of this kind and instead argue for a holistic approach reflected in diverse audiences, geographies, types of engagement, and programme and partnering models (Fullman, 2012).

Nina Schuller stresses both the importance and the potential of digital technologies for promoting equal participation in creating our 'shared imaginings' of a sustainable world. More specifically, she places emphasis on the issue of knowledge making and translation as it relates to climate discourse, trust, knowledge and action. Similar to the insights by Figueira and Fullman, Schuller recognises the importance of building trust upon which, as suggested by a number of studies, the acceptance and use of climate knowledge is predicated. Yet, the author also points to the unequal politics of translation and knowledge production, with corporations based in the Global North, like Wikimedia, as well as some national governments holding disproportionate control over what kind of

climate knowledge is accessible on the web, and how it is translated. This kind of digital or data colonialism reduces epistemic diversity and undermines the intercultural trust necessary for effective global climate action.

Closely related to these insights, Jessica Gosling underscores the value of digital skills in mitigating climate change. It is hard to imagine a global co-operative effort to address the climate crisis without different parties being able to use communication technologies in an equitable manner. However, Gosling observes that digital competencies and access to new technologies are far from evenly distributed among nations. This is particularly problematic for developing or rapidly industrialising countries, where these skills and resources are not only vital for enabling their meaningful participation in global climate governance, but also act as one of the foundations for building economic and social prosperity. Gosling also notes that a climate-just future requires all citizens to be able to 'have more of a voice to articulate their wants and needs' – an ability for which, in this day and age, digital skills are of crucial importance. Thus, she concludes by emphasising the vitality of education, including digital education, entrepreneurship and soft skill development, for realising the commitments enshrined in the Paris Agreement in an equitable manner.

Charlotte Nussey highlights the important connections between climate justice, culture and education. 'Culture' can be used to exclude or oppress when not understood in terms of multiple forms of knowledge, while cultural expressions of climate change that centre historically excluded and marginalised voices can serve to increase our collective knowledge, flatten hierarchies and challenge taken-for-granted categories. Nussey highlights the way in which cultural and artists' acts of protest, from the work of artist-poet

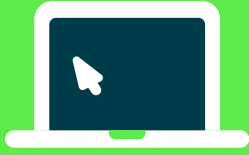
Kathy Jetñil-Kijiner to the Kenyan Green Belt Movement, help embed climate change within communities and highlight often-intersecting forms of inequality and exclusion. This echoes the work on intersectional climate justice and argues that climate justice is also a matter of racial justice, gender justice and others.

The essay by Chloé Germaine Buckley and Benjamin Bowman speaks directly to issues of climate justice given its focus on the Youth Strikes for Climate. As others' essays have highlighted, climate justice as presented here and by young people is intersectional, drawing links between the climate emergency and racism, colonialism and patriarchy. For Buckley and Bowman, the climate strikes are a global conversation, and this conversation is concerned with dissent, solidarity and justice. The climate strikes, read as cultural exchange, allow young people to listen to one another, share experiences and uphold each other's voices. As for what is next, Buckley and Bowman argue that people, including adults in power, should engage in dialogue with youth, who will ensure that justice is at the centre of efforts to address the climate emergency.

In his essay on the emergent energy humanities, Sam McNeilly convincingly argues that cultural relations can help ensure that individuals, communities and institutions place justice at the centre of global efforts to transition away from fossil fuels. Much of the work that McNeilly draws on, such as the writing of Ken Saro-Wiwa, speaks to, or actively calls for, environmental or climate justice. In the essay McNeilly suggests possible ways to move towards a future free of fossil fuels, but cautions that the shift to renewable energy is itself not inherently just, rather it must be won. Like other essays in the collection, McNeilly stresses the importance of education, in this case in the democratic, and just, energy transition.

As we have shown above, questions of equity and justice in cultural relations are interwoven into all the essays in this collection. Authors have pointed to issues of intergenerational justice, the intersection of culture, politics, education and technology, different levels of access to education and other resources among and within nations, and the unequal nature of climate knowledge production itself. What emerges from these contributions is an extremely complex picture of what we know, how we think about and how we co-operate to solve the climate emergency. There may be many challenges ahead, but the authors and editors of this collection share the hope that cultural relations, if done the right way, can help foster a global ethics of care for the planet and all its people.

While the G7 Summit held in the UK in June 2021 saw reaffirming goals of reducing global warming, it also failed to reach climate finance targets needed by countries in the Global South, those at the sharp end of climate change's impacts. COP26 will be an occasion to do better than that. Regardless of what happens behind the closed doors of COP negotiation rooms, we can be certain that the vibrant cultural exchanges between different people and cultures held in Glasgow this November will continue to foster the inclusive and diverse cultural relations we need to address the global climate emergency.



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