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THE GEOGRAPHICAL ONTOLOGY CHALLENGE IN ATTENDING TO ANTHROPOGENIC CLIMATE CHANGE: REGIONAL GEOGRAPHY REVISITED

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ABSTRACT

Anthropogenic climate change is a complex process that does not respect political boundaries. Thus it is argued states are problematic agencies for tackling the global climate emergency. But it is the world political map that provides the geographical ontology foundation of the massive efforts of climate policy development. Geography's long tradition of regional study is suggested as a means of countering focus on states for policy development. Ontological inventions are proposed that transcend states. These take the form of experimenting with geographical regions encompassing human-environmental interactions as alternative spatial policy framings to the world political map. Three examples are presented: intergovernmental resilient regions for mitigation; localization through urban sustainable regions; and regions for planetary stewardship of humans-in-nature. None of these are 'solutions', rather they are illustrations of possible future regional geographies intended to stimulate current cohorts of geographers to contribute necessary regional thinking to the scholarship unpinning climate change policymaking.

Key words: Climate emergency; regional geography; world political map

A GEOGRAPHICAL ONTOLOGY PROBLEM

The international effort to combat climate change has developed over several decades into a huge undertaking centred upon two lead operations. Established through the United Nations, these are the Conference of the Parties (COP) to the UN Framework Convention on Climate Change and the Intergovernmental Panel on Climate Change (IPCC). The latter provides the science as input for the former to produce the policies. This impressive process has recently been in full swing with Glasgow's COP26 and publication of IPCC's Sixth Assessment Report both happening in late 2021. With 197 governments signed up to COP

and with the latest IPCC report based upon the work of many tens of thousands of scientists, it would seem the Climate Emergency is getting the necessary attention it warrants as we battle to keep global warming to no more than 1.5 degrees centigrade. What could go wrong?

The key outcomes of COP26 are summarized by the UK Presidency (2022) as 'The Glasgow Climate Pact' consisting of progress in four 'goals': '153 countries' have agreed *Mitigation* proposals, '80 countries' are embracing *Adaptation* policies, '34 countries' have signed up to *Finance* commitments, and there is *Collaboration* which is presented as universal. My interest here is not in the detail but in the language employed to describe COP members: 'countries'. But what is a country in

this context? Answer: a member of the United Nations. The latter is an exclusive club of sovereign states. So countries are states – does it matter which term is used? Actually yes from a social science perspective: in the social sciences and specifically in political geography there are theories of the state. This is a body of knowledge that treats the politics of states as a process to be critically analysed.

The literature on the nature of the state is huge but one of the most influential studies is also especially relevant to the matter of addressing climate change: James Scott's (1998) "Seeing Like a State". His basic thesis is that the opus operandi of states involves simplifying problems to their bare essentials. Such policy development creates a degree of legibility that makes possible deployment of state instruments to cope with the innate complexity of their societies. Scott introduces his argument by using state forestry policies that generate the complete inverse of complex ecology (pp. 11–22). Scott's overall focus is the internal relations of states but his simplifying thesis can be easily extended to external relations: the simple cliché 'the enemy of my enemy is my friend' operates as the first rule of international relations. The key point is that this theorizing of the state contends that the practice of states cannot handle complexity. This is serious for climate change interpreted as humans disturbing Earth's ecological balance. Put bluntly, a rolling programme of agreeing to a variety of simple goals and pledges does not bode well for attaining a viable ecology of humans-in-nature.

So why is policymaking to combat climate change being done by states that are seemingly agencies unfit for this purpose? Quite simply, there is no alternative. For instance, when geographers make a global contribution that involves applying their cartographic skills they are stuck with the world political map: the obtainable statistics are data describing states, most commonly provided by the United Nations (e.g. Brunn 2022). What to do? One way forward is to consider this situation as a geographical ontology problem. Ontology is the study of existence, theorizing our experience of the world. As such it is rooted in understanding society and how we operate within it. Perforce this has a spatial dimension, a geographical ontology both created through, and guiding,

social behaviour. Today this spatial ontology is the world political map of sovereign states, created through, and guiding, international relations. It derives from the overthrow of the previous imperial world map and has resulted in a 'nationalising' of global space, epitomized by the foundation of the United Nations. It is this spatial ontology that ensures policymaking on global issues is channelled through states. By definition ontology is deeply embedded; it is national identities held by individuals that underpins the world political map. Thus necessary social change based upon some universal sense of global care is as yet barely credible. However we can begin to think in terms of ontological interventions, ways of contravening the geographical ontology. An obvious starting point is to highlight a simple disjuncture: anthropogenic climate change is no respecter of human-made political boundaries. Enter the field of study that is Geography.

But therein lies a problem. The mainstream practice of contemporary Geography has become bi-disciplinary – half in environmental science, half in social science – thereby departing from the long-term tradition of Geography as a field of study focussing on relations between people and environment (Taylor & O'Keefe 2021). Geography as a modern university research discipline has led to a separation of physical geography and human geography researches, each looking outward to different cognate research disciplines. This places Livingstone's (1992) half-millennium of 'Geographical Traditions' studying people-environmental relations in peril. But with anthropogenic climate change coming to global centre stage, the time is ripe for an explicit revitalization of the study of human/environmental relations in Geography.

This paper has two purposes. The practical purpose is to explore how we might begin to tackle the geographical ontology problem. I introduce basic ideas on the use of regions as an instrument in geographical studies. This is then used in devising three ontological interventions into standard climate change policymaking as premised on the world political map. The ultimate purpose is to stimulate new ways of thinking about the geographies of anthropogenic climate change. Put simply, given that we are dealing with an

acknowledged existential issue we really do need as wide variety of scientific perspectives as possible, different ways of making cognitive sense of our predicament. The geographical ontology problem seems one good place to start.

REGIONS IN GEOGRAPHY

Regions are widely employed across both the environmental and social sciences. They are useful for ordering empirical material geographically and enable comparative analyses to highlight both similarities and differences across space. Thus they are employed in IPCC Assessment Reports: key examples are IPCC et al. (2013, p. 1317) Figure A1.3 'Overview of regions used' and the IPCC (2021) *Interactive Atlas*. In geographical terms these IPCC regionalizations are quite crude with regions depicted as rectangular boxes. The simple process of generating box-shaped regions starts with continents, which are then divided by straight lines generally using cardinal compass directions. This use of continents is itself problematic: they were brilliantly debunked as meaningful world regions long ago by Lewis and Wigen (1997). So why the use of continents by IPCC? Because in political terms continents are the meta-geographical basis of the world political map: states are typically denoted by continent – X is a European state, Y is an African state, etc. Thus mapping of climate change starting with continents is part of the geographical ontology this text is challenging.

The nature of regions has been a core concern of Geography. As Livingstone (1992) describes in detail, the concept of the region dominated much geographical writings in the twentieth century. Here I provide a quick primer on the changing focus on regions by geographers. Two basic types of region have been deployed: formal regions and functional regions. The former are defined by similarities; a formal region differs from other formal regions because it contains unique content across its areal extent. In contrast a functional region is defined by connections, typically linking together different content across its areal extent. Initially formal regions dominated as 'regional geography': designated

'geographical regions', their study was based upon understanding place as a synthesis of human and physical relations. This elevation of synthesis over analysis made Geography an unusual academic discipline, controversial both within Geography and in the wider academia (Kimble 1951). Subsequently regional analysis came to dominate as 'regional systems' focusing on human functional relations in place. In a seminal essay Philbrick (1957) showed how formal and functional regions were essentially related in human geography without any need for traditional synthesis. In this latter format the concept of the region has been less central to Geography as a discipline but it has remained a critical research tool (Allen et al. 1998; Entrikin 2008; Agnew 2012; Paasi et al. 2018). Much of this subsequent work has developed Philbrick's insights through viewing regions being essentially dynamic both temporally as contingent and spatially as connected. In this text I draw upon both regional traditions, using analysis but always with synthesis as the ultimate objective.

The mixing of the formal and functional regions in human/environment relations can occur at many scales of study. For instance, at the local level there is transhumance whereby people move their animal livelihoods with the seasons and which can include drawing administrative boundaries so that settlements incorporate both valley and uplands. At the global scale this type of mixed spatial organization is represented by the concept of pan-regions derived from US President Monroe effectively claiming the Americas as the USA sphere of influence in the early nineteenth century. Building on this initial proposed revision of the imperial world map, in the mid-twentieth century three more pan-regions were proposed: Europe-Africa for Germany, Russia-India for the USSR and Pacific Asia-Australasia for Japan (O'Loughlin & van der Wusten 1990). Pan-regions are multi-latitudinal thereby giving each regional super-power access to a wide range of world environment zones. Such a world political map never came to fruition due to the nationalization of global space in the world politics we experience today. But the point I am making is that we can begin to use this form of mixed regional logics of places and flows for

an entirely different purpose: ontological interventions in climate change policymaking through regional studies.

ONTOLOGICAL INTERVENTIONS BY REGIONS

There are three basic environmental policy needs for which new regional logics are applied: mitigation to create resilience, adaptation to enable sustainability, and stewardship to promote development of humans-in-nature.

Inter-governmental resilient regions – Physically, we are living in an ever more dangerous world. After several decades of warnings that the warming of the global atmosphere creates additional frequent and intense weather events, these can no longer be brushed aside. As predicted, extreme weather emergencies are being experienced by increasing numbers of people across the world. Although widely publicized through the media, they are still treated as ‘events’ affecting specific groups of people. However with hotter, windier, wetter, bigger events merging, there is a new ‘weather normal’ developing that will affect all. That is the risk assessment; policies are needed in mitigation.

Of course, the geographical distribution of different types of extreme weather bears no relation to the world political map. And yet as things stand, resilience policy development and implementation is a matter for states. Thus in the last year a heat dome straddled the US-Canada western border, massive flooding straddled Germany-Netherlands-Belgium boundaries, and huge land fires were to be found in Turkey, Greece, Italy, France and Spain. All currently deemed to be exceptional and largely dealt with independently in different states, these circumstances do give rise to strategic questions. For instance, why were fires on the northern shores on the Mediterranean Sea dealt with by five different states, when they are each part of a single geographical process: the frontier of the Sahara region jumping across the Mediterranean.¹ And such political division of response will be repeated for future events even though the latter will likely exhibit

as even larger areas of regional environmental risk.

There is a geography of susceptibility for every type of extreme weather. Therefore it is possible to define regions of risk, not with neat boundaries like states, but with clear expanses of risk circumscribed by declining probabilities of said risk. The human response to such physical risk is to build resilience, to live with the risk while minimizing its destructive effects. In other words policymaking should be about constructing resilient regions without concern for political boundaries. But how?

We have hit the buffer of state sovereignty. There are examples of joint sovereignty arrangements, known in international law as a condominium, where two or more states share political power, for instance over adjacent waters (river, lake). However resilient regions do not require such full comprehensive transfer of power, rather they need policy specific powers. These are more like local government arrangements, in the USA called Conferences of Government (COGs), where coordination of policies is required, for instance in planning (Glass 2015). Copying such arrangements internationally would require specific purpose inter-governmental policy bodies for designated multi-state resilient regions. Being for a specific purpose, resilient regional boards would combine scientific membership with state representation. Necessarily involving states, nevertheless this could be operational because mitigation is the simplest of policies in tackling climate change.

A key point is that such relatively modest regional governance proposals might presage more profound political changes. Increasing in number over time, and overlapping for different environmental risks, resilience regions will create a complex spatial organization of authorities that will inevitably challenge the simple pattern of the world political map. And that is the ontological intervention: a growing regional complexity that overtly, necessarily, subverts state sovereignty.

Localization through sustainable regions – Adaptation to climatic changes implies more fundamental alterations in ways of living

than mitigation. Being sustainable is more than surviving events; it is about maintaining society, reproducing our world in a more ecologically sound manner. One critical concern for sustainability is the current geographical scale of human activities: ever-growing global production chains satisfying global consumption demands constitute a dangerous geography. The remedy is superficially straightforward: economic supply and demand of the goods through which we reproduce our everyday lives should, as far as possible, be localized. But this begs the question how local? This is a slippery concept that itself can vary greatly in scale of operation. Sourcing from the immediate locality where a consumer lives is one popular way of localising the economic process, but this specific scale cannot encompass the vast majority of transactions that constitute even the basic economic needs of contemporary households (Taylor 2012). So what scale the local?

As a macro-economic process, there is one obvious answer: states. They administer 'national economies' and can be viewed as 'local' specifically in contrast to the global. And states have a relevant track record: policies ranging from protectionism to promoting home production are common historic types of localization. But treating states as representing a single scale of human activities is hugely problematic. States vary immensely in size by both land and population. For instance, there are 11 states with populations over 100 million contrasting with over 40 states with populations less than one million. A key point is that these size differences actually affect the possibilities of economic localization by states: the smaller the state and its economy, the less self-sufficiency. But large states being more self-sufficient is hardly relevant to localization as continental-scale states are not credible as 'local'. Thus using the world political map as a basis for policies promoting sustainability through localization makes no sense.

Producing credible sustainability regions requires identification of a different economic process that can generate localizations at one meaningful scale of activities. There is a recognized ontological alternative to states: cities in their functional regions (Taylor &

Derudder 2022). Whereas states are essentially created as places, cities essentially function through flows. A focus on flows in, through and between cities can be found in Jacobs' (1970, 2000) modelling of economic development. Her basic thesis is that development occurs in cities via economic localization: imports are replaced by production within the city's functional region thereby enabling shifting to new imports. This import replacement simultaneously enhances a city's economic agglomeration and its interactions with other cities. Although this process is responsible for producing the economic growth that is ultimately responsible for generating anthropogenic climate change, as localization it also contains the means for creating sustainable regions.

Sustainable regions are urban regions; but not in the sense of traditional city hinterlands or contemporary mega city-regions (Harrison & Hoyer 2015). Two basic tenets of Jacobs (1970, p. 35) are a city's development is never simply based upon relations with its hinterland and that a city never develops alone but always as part of a regional group of cities. The latter are city networks through which individual city innovations are diffused. Historically such networks were relatively small inter-city regions (Taylor 2013, pp. 133–177), a process that has become increasingly globalized. The purpose of inter-city sustainable regions is to reverse the latter through managing localization. Past historical city networks have prospered with as few as five main cities and perhaps generally include a dozen or so cities. Inter-city regional networks of about this number of cities can be used to define sustainable regions.

What might this mean in practice? There are currently national networks of cities with the appropriate numbers in medium-sized states such as France, Germany, Italy, Japan, Pakistan, South Africa, the UK and in some existing small state combinations notably Benelux and Scandinavia. Otherwise, sustainable regions may be created by carving up larger states or by linking together smaller states or mixtures of the two. Thus North American sustainable regions might be based upon traditional US regions but including Canadian cities (e.g. Toronto with the US North East and Vancouver with the US Pacific region). Overall sustainable regions as green

networks of cities would be an egregious ontological intervention into the world political map.

Sustainable regions remove the economic function from modern states, the key feature of their creation over the last two centuries (Taylor 1994). Thus this ontological intervention could only occur under the effect of great social pressure, the climate emergency coming to a head. However states would remain important, renewed for dealing with political-cultural fall out from the on-going emergency, leaving them as critical political-cultural entities. If this scenario came to pass sustainable regions would operate as city regional leagues with policies to restrain commodity flows through policies giving preferential treatment to intra-league flows first, followed by flows with neighbouring leagues. In this way sustainable regions would provide a radical change towards worldwide economic localization.

Towards regions for planetary stewardship – Stewardship of nature is a step beyond mitigation for resilience and adaptation for sustainability. Stewardship locates humans as part of nature. Being integral to nature is a means of imagining our species with a natural posterity of myriad generations into the future. Thus stewardship as conceived here is not like the traditional estate steward taking care of land on behalf of its owners but rather it is about outliving today's climate change through an ecological focus on mutuality rather than hierarchy. And this must include cities: we are now, according to Glaeser (2011, p. 2), an 'urban species'. Thus cities can be viewed as particularly multifaceted ecological phenomena (Jacobs 2000), their complexity resting on internal agglomeration and external connectivity. With humans-in-nature the resulting intrinsic innovative capacities must continue to be harnessed (Plastrik & Cleveland 2018): much creativity is needed in relation to the climate emergency but the nature of resulting social change has to be very different. Ultimately, today's city-led economic development across the world will have to be supplanted by city-led planetary stewardship of nature.

There is a simple geographical proposal that attends to planetary environmental changes: E. O. Wilson (2016) has suggested

dividing the Earth's surface in two and banning humans from one half. The purpose of relinquishing control of half the world's surface is to enable ecological natural diversity to develop without human interference. This argument posits humans versus nature, the precise opposite of the humans-in-nature position taken here. But it does point us towards thinking about the whole of the Earth's surface. From this planetary perspective we can discern a huge bias in studying Earth ecology. Despite the oceans covering more than 70 per cent of the Earth's surface, the scientific literature is largely focussed on the land surface. Thus in the Sixth IPCC Report, a very large literature on oceans is reviewed but it is contained within one chapter that it shares with the frozen land of the Cryosphere (IPCC 2019). As such it is no way near a pro rata of 70 per cent of IPCC science, which is not surprising but no less important from a planetary perspective. A key point is that most of the world's oceans are not controlled by states – they are literally outside the world political map. Therefore this seems an interesting locale for a final ontological intervention. Designated as Areas Beyond National Jurisdiction (ABNJ), there are governance instruments (the Common Oceans ABNJ Program) that contain regional arrangements promoting sustainable management of fisheries resources and biodiversity.

IPCC regionalization of the water surface of the Earth is very simple, similar to the land-based regions criticized earlier. Oceans replace continents as the initial framing upon which a series of straight lines define regions: for instance Atlantic and Pacific divided into North, South and Tropical, Indian into Tropical and Temperate (IPCC 2019).² But the key point is that human interaction within all of these regions has become a ubiquitous; we are omnipresent. Thus one common physical change across all oceanic regions is an increase in acidification. This is a negative humans-in-nature, human activity creating new nature. Such interaction between social and environmental processes is encapsulated by the concept of planetary urbanization: everywhere on Earth is subject to contemporary urban growth processes (Brenner & Schmid 2014).

So what should world regions for planetary stewardship look like? For a start they cannot merely mimic land-based regions as mosaic patterns; regions of the seas are essentially three-dimensional, with light penetration a key variable and where solid and fluid appear as contrasting mediums for environmental change. This is a new world of regionalization. It needs to involve a mixture of formal outcome (place) and functional process (flows) that will include links into land regions. The practice of Earth stewardship – positive humans-in-nature – will require the amalgamation by geographical regions across, through and between land and sea.

CONCLUDING COMMENT

While the current process of policy making through the IPCC with its vast researches and COPs with its enormous negotiations necessarily continue, what are offered here are modest ‘ontological interventions’, illustrations of other ways of thinking about the spatial structuring of people-environmental relations. In the immense complexity that is Earth ecology these increasingly fraught relations are manifest in regions, hence the interventions have been exercises in regional geography.

Regional geography’s heyday was in the first half of the twentieth century. Subsequently most regional studies tended to focus more on one or other side of people/environment relations. And this focus bias is continued in my first two ontological interventions: the regions for mitigating change are defined by physical processes; the regions for building sustainability are defined by social processes. However, in marked contrast, regions of stewardship as humans-in-nature bring forth the immensely difficult task of synthesis. Therefore there are good reasons why the final ontological intervention is the least developed in this text. Disciplinary history suggests a more modest goal, perhaps assemblages of regional studies. When can we read the multi-authored “Regional Geographies of Plastics” from production, consumption and waste disposal, to physical, chemical and biological environment consequences, and back to human medical consequences?

So this text is ultimately a request for current cohorts of geographers to give serious consideration to bringing back regional geography as a specific tool-set, analytic and synthetic, as part of their contributions to tackling anthropogenic climate change. It is understood that this is not straightforward for a variety of reasons. Mimicking the wider scientific community, there is currently far more research on the climate change emergency by physical geographers than human geographers. And yet the continuation of regional research in geography has been largely by human geographers, often in conjunction with regional planning; the plus side being their applied orientation. There is no suggestion that current researches should be reduced or diverted, rather thinking regionally should be an additional layer with vital policy development implications. One thing is sure: critical consideration of the world political map as the geographical framing for confronting anthropogenic climate change is long overdue.

Endnotes

¹This was exemplified by the first European temperature recording of 50°C in Sicily in 2021.

²These are very basic formal regions. However there are four designated functional regions based upon physical flows and human interactions. These are the Eastern Boundary Upwelling Systems (EBUS), two off the American Pacific coast (Peru-Chile and California) and two off the Euro-African coast (Canary and Benguela). The reason for these regional exceptions is simply that they constitute the most productive parts of the oceans from a human economic perspective. But the four regions constitute only a very small proportion of Earth’s water surface. From a humans-in-nature perspective any functional regionalization should venture far beyond EBUS regions.

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