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A Word from the Editor

Welcome to the 2018 edition of *Atlas* - the 16th issue in the publication's 51 year history. Ever since the revival of *Atlas* three years ago under the editorial of Luke Scully, DU Geographical Society has strived to sustain this special tradition of demonstrating the engagement and respect for geography our members possess. The high standard of every one of our submissions, and the difficulty with which the final six were selected, is a testament to the enthusiasm and passion GeogSoc members have for their field - and to the members, I give thanks.

The theme of this year's edition inadvertently developed into an anthropocentric one. The six fantastic essays discuss different facets of the human condition, how human societies worldwide interact both with each other and within themselves, and how they treat their environments. In this journal you will gain fascinating, informative insights into trade, race-issues, communities of the past, contemporary Irish politics, climate change, and even sports. If human geography piques your interest, there's definitely something for you in this year's *Atlas*.

Editing *Atlas* is by no means a job for one, and would have been insurmountable without the invaluable help and input from some familiar faces. Firstly I'd like to thank former editor and GeogSoc secretary, Trinity alumnus, and friend Rachel Gallagher for the selfless donation of her time in guiding me through the process of publishing this journal, without which I would surely have been lost. Bedankt. Thanks to Molly McGrath for the attractive and striking cover design, and for your contributions as Sub-Editor. Best of luck for the year ahead as Chairperson, I know you'll nail it. Thanks to Evan Carey for your seemingly limitless knowledge on the administrative end of all things GeogSoc. I value your experience and without you this may not have been quite a happy landing. Thank you Dr Cian O'Callaghan for believing in the publication and for your time as President. I owe you a pint.

Special thanks must be given to our Treasurer Mark McMahon and to the TCD Association and Trust. Without the financial support of the Trust, and the generous donation of Mark's time in liaising with the Trust, *Atlas* literally would not exist and so to them I am eternally grateful.

It has been a privilege to be Editor for Volume 16 of *Atlas*. I am immensely proud of the result and the team behind it. I hope you enjoy it and learn from it, for this is what geography is all about.

Geog on,

Andrew Duggan Murphy

President's Welcome

I am not a Trinity alumnus, nor have I been a member of a student Geographical Society. So I was a little surprised, but very pleased, to be asked to be Honorary President of the DU Geographical Society last September. Since enthusiastically accepting the invitation and attending my first committee meeting, my engagement with the Society has come in the form of enjoyable fits and bursts interspersing my regular teaching commitments throughout the year. These interactions have been a particular pleasure for me. In all my dealings with the Geographical Society, I have been very impressed with their level of organisation, intellectual curiosity, and social engagement.

International and national trips, to Warsaw and Cork respectively, pulled together a great mix of activities – always combining the geographical and social – and furthermore were costed at an affordable price. This concern with the wider resonance of geographical issues and with inclusion was echoed during a stellar set of events during GeoWeek. All focusing on the theme of the Geography of Rights, these included a film screening, the innovative and original BinGeo, and a set of talks on the theme. I participated in the latter myself, delivering a talk on housing to compliment other invited speakers who discussed ethical fashion and climate change activism. Throughout all this, the Committee and Society handled the organisation with good grace, fun and efficiency. They even weathered the storm of a mid-term change of leadership and Committee reshuffle – effortlessly picking up the pieces and moving forward under the new team to host the biggest Earth Ball ever. My only regret was not being able to field a staff team for the annual Christmas pub quiz, possibly a shameful first for an Honorary President.

To Atlas. I do know something about the work that goes into putting together a student-led Geography publication, having edited the 2004 edition of the UCC postgraduate Geography journal Chimera. Canvassing for submissions, selecting articles, drawing connections and outlining themes are all engrossing but nevertheless fun. But the ‘behind the scenes’ stuff of copy editing, formatting, and organising printing are in equal measure time-consuming, infuriating, and (hopefully) ultimately rewarding. For his work here as Editor, Andrew Murphy requires special mention. Drawing together the contribution from the authors, the Committee and the Society members, this edition of Atlas stakes a claim for the importance of the Geography to understanding our contemporary world. The broad themes explored in the set of essays focus on the interactions between human and physical environments in the past, present and future. Taking in topics including globalisation, climate change, political activism and historical landscapes, this collection shows the centrality of Geography to understanding the world and attempts to change it for the better.

I cannot recommend Atlas and the Geographical Society highly enough. Dive into these essays and explore the work that Geography and Geographers do in making sense of our world in these often troubling times. The join the Society and continue this work... but not without having some fun along the way.

Happy reading!

Cian O’Callaghan,

Honorary President

Chairperson's Message

I'm glad to welcome you to the DU Geographical Society's annual publication of Atlas. I'd like to start by congratulating all the entries for this year's publication, there was a remarkable standard in all entries received. I'd also like to thank Andrew Duggan Murphy the society librarian for compiling this publication so diligently, society PRO Molly McGrath for designing the beautiful cover, and treasurer Mark McMahon for securing a grant from the Alumni office.

It has been a massive year for the society with almost a complete turnover in the committee and it has been an honour to chair the society in such a time of change within geography in Trinity. My sole hope is this change is carried forward by next year's committee.

There have been massive achievements within the society this year, from organising the biggest Earth Ball (EVER!), to bringing almost 30 geographers to Warsaw, Poland, it has been an honour and a privilege to oversee it all. Earth Ball 2018 also saw the introduction of the new Rachel Gallagher Award, an award presented to the geography student which best embodied the ethos of Geography in Trinity. The award was presented on the night to Aisling O'Boyle (who also features within this publication), her hard work and desire to enact change led to her invitation to the UN general assembly in New York on behalf of the Irish Girl Guides.

On the sports field the society's beloved Globetrotters fought valiantly to secure a second-place finish in their division, the best performance in society history. The team was a constant source of joy for many society members throughout the year and is always one of the society's highlights. Ryan Kinlough's excellent performances earned him player of the year.

To finish I'd like to sincerely thank the committee, in particular Shona Egan the society secretary who was endlessly helpful throughout the year, tirelessly working in the background doing jobs which garner little thanks. I'd also like to thank Mark McMahon who has performed excellently in his role of Treasurer, and has been a constant help to me and to the society. Our honorary president for the year was Cian O'Callaghan. His insight and counsel were invaluable throughout, and for that I am forever grateful.

Great thanks must be given to the Alumni office for their funding of this publication, without which Atlas would not be possible.

Geog on,

Tadhg Browne,

Chairman, DU GeogSoc 2017/2018

Mapping spatial geographies of digital contention – a case study of the anti-water charges movement in Co. Dublin

Gráinne Nic Lochlainn

Introduction

Throughout history, social movements have been drivers of change and facets of public engagement in the structuring of societies (Tilly, 1978). The social movements which will attempt to affect twenty-first century societies will be products and subjects of ‘the network society’ (Castells, 2010), representing the combined physical and digital geographies that this entails. How movements engage with social media, and how these technologies will impact upon and be influenced by movements’ real-world forms, geographies, and effects upon society, remains to be seen but this will undoubtedly be a pressing question throughout the twenty-first century.

Accordingly, studies of digital contention are important for modern societies and draw upon a long established and constantly evolving field of social movement research. The rise of the internet and social media in the late-twentieth/early-twenty first centuries have presented a number of new frontiers for social movement research which have been pursued in an aspatial manner (e.g. Hick & McNutt, 2002; van de Donk et al., 2004). Where geographical approaches have been applied (e.g. Harvey, 2012; Castells, 2012; Suris, 2012; Jurgensen, 2012; Juris, 2012), there has been a focus on a small number of high-profile social movements whose main spatial characteristics are their occupation-based tactics. This article argues in favour of taking a geographical approach to social movement research (as advocated by Sewell, 2001, Martin & Miller, 2003, and Nicholls, 2007) but extending this geographical perspective to digitally networked social movements.

The article begins by providing a brief overview of the emergence of the anti-water charges movement before outlining the data collection methods used. It goes on to visually demonstrate what maps of geographies of anti-water charges digital contention can look like and what they show about anti-water charges digital contention, before concluding with a discussion of the theoretical, methodological, and practical implications of spatially mapping digital contention.

Historic background of the anti-water charges movement

In November 2010, the Fianna Fáil-Green Party government reached an agreement with the European Commission-European Central Bank-International Monetary Fund regarding the introduction of water charges. A subject of dispute in the 2011 general election, water charges were later implemented by the Fine Gael-Labour government. This involved the incorporation of Irish Water in July 2013 as a national utility under Ervia, which describes itself as a ‘commercial semi-state company with responsibility for the delivery of gas and water infrastructure and services in Ireland’ (Ervia, 2015).

Opposition to water charges and to Irish Water has been widespread and a subject of public interest (Flaherty & D’Arcy, 2015; Brophy, 2015). Opponents have raised a number of principled and practical objections toward the system as established in Ireland. These criticisms include: the privatisation of water services which had been under the purview of local councils (Right2Water,

2015); ‘double charging’ within the system (Direct Democracy Ireland, 2014); cronyism and corruption within Irish Water (Fliuch Off Irish Water Ltd., 2015); and the linking of water charges with austerity policies at national and European Union levels (Daley, 2015). Trade unions, political parties, local pressure groups, and protestors have allied in a broad-based movement which has been subject to internal and external pressures, particularly with regards political representation in the 2016 general election.

Academic interest in the anti-water charges movement has involved large-scale surveying (e.g. Hearne, 2015) and sociological perspectives (e.g. Cox, 2017), neglecting geographical perspectives on anti-water charges contention. Hearne’s study (2015) of the anti-water charges movement, the first academic large-scale research to be conducted on the subject, highlighted social media as a key component of the movement. This insight and first-hand observation of active social media usage to contest water charges throughout 2012 to 2015 attracted my research interest as a subject for undergraduate dissertation research, which is being expanded upon at postgraduate level. This article draws upon initial observation of anti-water charges social media usage and its inherently geographical nature, with specifically situated local groups forming a complex network of online interaction, shaped by and shaping the movement’s structure and character.

Methods

The research used an idiographic case study approach to map the online network of the anti-water charges movement in Dublin. Online fieldwork was conducted from July to October 2015 to map anti-water charges digital contention in Dublin. Research was targeted toward Facebook community group pages because of the platform’s popularity and the ethical questions arising from digital fieldwork. Focusing on community group pages allowed for ethically justifiable data collection – community group data were publicly available and could not be traced back to specific individual(s).

The research began with the question of identifying anti-water charges Facebook community groups in Dublin. Specific criteria were established for inclusion; pages had to be classified as a community group, had to self-identify as specifically anti-water charges, and had to have a spatial/territorial self-description within Dublin. Pages satisfying these criteria were sourced using a combination of Google and Facebook searches of keyword phrases. In keeping with selection criteria, each page had a self-described spatial geography, although the extents, scales, and accuracy of these ‘territories’ were subjective.

Visualisation of spatial geographies used ArcMap 10.3.

Results

Having applied the classification parameters outlined above, the research identified the total research population as consisting of one hundred and seventy separate Facebook community group accounts.

Territorial self-designations were used to construct a GIS database of points and polygons recording digital contention locations. Polygons interpreted territorial designations at a number of varying scales (from individual housing estate to electoral district levels). Points represent the centroids of territorial polygons. Accordingly, there are a number of assumptions built into spatially ‘locating’

digital contention – the spatial geographies depicted are self-identified territorial ranges rather than areas of confirmed and uncontested representation.

Geography of presence/absence records whether or not an existing group identified with an area. Likely as a result of the ease of page formation, community groups claimed to cover the majority of the county. Interestingly, there are ‘quiet zones’ with which no groups identified themselves (figure 1). Presence/absence geographies were represented using polygon shapefiles in ArcMap. To make visual interpretation of presence clearer, these polygons were converted to a point shapefile with points generated from polygon centroids, visualising anti-water charges coverage in a more place-specific format (figure 2).

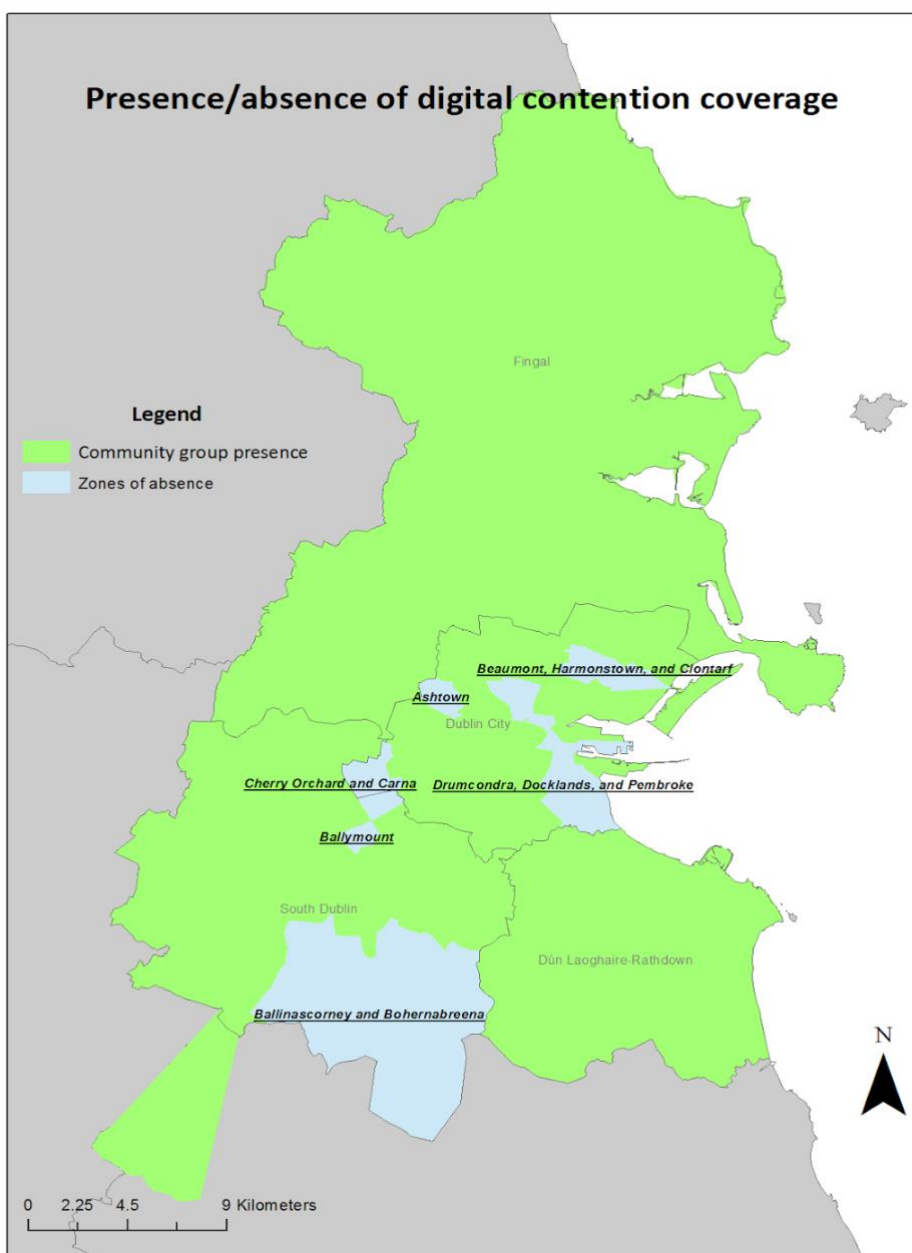


Figure 1: Presence/absence geographies of community groups.

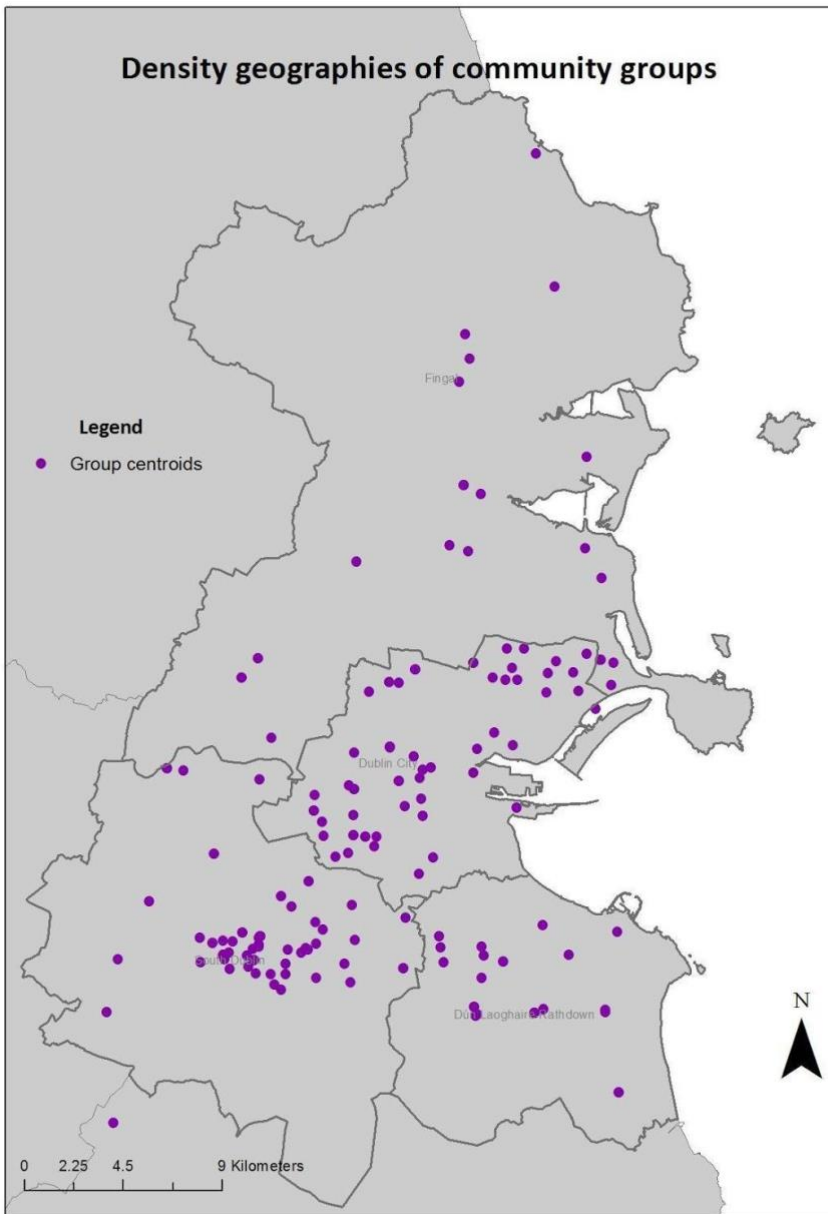


Figure 2: Density geographies of community groups.

Discussion

The digital contention of the anti-water charges movement exhibits distinctive spatial geographies. Firstly, whilst contention occurs with widespread geographical coverage, there is a notable lack of coverage in six areas (figure 1). This geography of absence is interesting because absence areas are typically surrounded by presence. They also exist in close proximity to densely represented areas. Absences may relate to variable density of representation – in particular, the Cherry Orchard/Carna and the Beaumont/Harmonstown/Clontarf absence areas may be represented without being named within neighbouring zones of greater density (e.g. Ballyfermot; Kilmore, Coolock, Santry, Marino).

An alternative (and perhaps co-occurring) set of processes are varying land-use, population density, and demographics. Absences may reflect a lack of residential function, with zones of industry (e.g. Ballymount) devoid of a resident population to mobilise against water charges. Additionally, absences could relate to the type of residency predominant within an area. Metering, which often acted as a direct impetus for group organisation, was not conducted on apartments. As a result, areas in which apartments are the primary form of residency (e.g. Docklands) may be less likely to be represented. Population density and demographics may contribute to the existence of absence areas in limiting the 'pool' of likely movement members. Accordingly, the Ballinascorney and Bohernabreena absence area might be the result of low population density or high percentage of residential population aged 0-19 (44%: Census 2011 figures). It should be noted that these limiting factors do not occur in many other areas and their influence remains conjectural.

Secondly, there are variations in the spatial concentrations of digital contention (figure 2). Digital community groups opposing water charges show different patterns of agglomeration and dispersal, with some places having a high number of groups present (e.g. Tallaght) and others having fewer (e.g. Fingal). This 'point' geography gives an alternative view on the geographies of digital contention which goes beyond simply presence/absence and raises further questions about how these geographies could (and should) be explained.

Conclusion

The geographies of digital contention in the anti-water charges movement are a complicated mosaic. The anti-water charges movement was created by and continues to create distinctive patterns of presence, absence, density, influence, and connection which can be visualised through mapping.

The research presented here is part of an on-going project in the broader field of post-2008 social movement and digital contention research and has significant theoretical implications in this context. Significantly, the research broadens the scope of academic discourse from high-profile and explosive physical occupation social movements to consider a less well-studied form of emerging twenty-first century social movement. In doing so, the research points toward an alternate form of contention which could potentially act as an influential and enduring force for social change. Maps can be used to visualise the geographies of these digital forms of resistance and raise interesting questions about the relationships between space, place, and contention in twenty-first century societies.

Methodologically, the research demonstrates the efficacy of applying geospatial techniques to study social movements, 'geo-locating' digital contention in its spatial contexts. Practically, the research may be of interest to social movement activists and the study of twenty-first century society and politics, in Ireland and abroad. Maps produced by the researcher are the first documented and methodical visualisations of anti-water charges digital contention. This may be of interest for comparison purposes with other movements (in Ireland and further afield) and for future works attempting to address the spatiality of digital contention.

These implications shape recommendations for future research. Firstly, in a general sense, study of modern social movements must seek a more balanced investigation of digital contention, rather than focusing on a small number of high-profile, well-studied movements. Geographical perspectives are

an ideal approach to take in this regard. Secondly, future research should endeavour to widen the scope of investigation, considering longer timeframes, multiple platforms of online protest, and comparative or multi-scalar spatial approaches, as well as integrating the digital and the physical to analyse geographical realities in ongoing movements.

Ultimately, social movements have served throughout history as drivers of socio-political change and will likely continue to do so in the twenty-first century, shaped by and shaping the world in which we live. With the rise of the internet, social movements of the twenty-first century have at their disposal a powerful tool rooted in individual and communal network interactions which has the potential to transcend both space and time. Understanding how these social movements manifest themselves is crucial to understanding how and why they contribute to and shape our realities at present and in the future.

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An examination of the drivers influencing recent changes in land redistribution policy in South Africa

Maeve McKiernan

Introduction

Since the arrival of Jan Van Riebeeck in 1652 in South Africa, black Africans have been dispossessed of vast amounts of land under colonial and then apartheid rule. The apartheid regime consolidated this dispossession through the creation of black ‘homelands’, with forced removals displacing up to 3.5 million black Africans (Fraser, 2007). The segregation of black Africans and forced removals also served an economic purpose by providing cheap migrant wage labour for industry and fostering a whites-only commercial agricultural sector (Letsoalo and Thupana, 2013).

By the advent of democracy in 1994, the agricultural sector was fully under white control: 87% of land was owned by a white minority representing less than 10% of the population and the promise of land reform was a ‘rallying cry’ for the liberation movement (Atuahene, 2011). With many black Africans living on poor quality land in former homelands, distanced from cities and industry, and having little foothold in the agricultural sector; radical transformation of land ownership was clearly required for ethical reasons (Boudreaux, 2010). In addition, land reform has important potential for creating economic growth, employment opportunities and building social cohesion (Lahiff and Li, 2012). However, disappointingly little progress has been made twenty-three years on from the first democratic elections and the shifting policies and politics surrounding land redistribution show little encouragement for the future.

The Post-Apartheid Land Reform Policy Framework

In 1994, the ANC set a target of redistributing 30% of land to black Africans within five years (Atuahene, 2011). This was based on advice from World Bank, and it has been noted that this target was based on the idea that 6% of agricultural land was transacted each year, and

therefore 30% of land could be transacted within five years: a proposition supposing that all of each year’s transactions would be part of the redistribution effort and ignoring the role of private transactions (Hall, 2004). This target was later extended to 2015, and is still far from being reached.

Land reform was enshrined as a key component of the *Constitution of the Republic of South Africa 1996*. Section 25 of the Constitution requires the state to ‘take reasonable legislative and other measures...to foster conditions which enable citizens to gain access to land on an equitable basis’. The section also states that property may only be expropriated through legislation and where such expropriation is ‘for a public purpose or in the public interest...subject to compensation...[which] must be just and equitable, reflecting an equitable balance between the public interest and the interests of those affected’ (Republic of South Africa, 1997).

To date, the Government’s land reform policies have been in line with this Constitutional provision. Early land reform policy was enumerated in the *White Paper on Land Reform 1997*. According to this policy, land reform would consist of three components:

- Land restitution through return of land or compensation;
- Land redistribution to promote more equitable land ownership; and
- Tenure reform to provide security for labour tenants and those in former homelands (Department of Land Affairs, 1997). Changes in Land Redistribution Policy From 1994
Land redistribution attempts to support black African to purchase land from white landowners, with Government assistance, in order to enable a shift to more equitable land distribution. The *White Paper on Land Reform* stated that ‘redistributive land reform will be largely based on willing-buyer, willing-seller arrangements’ and that ‘Government will assist in the purchase of land but will in general not be the buyer or owner’ (Department of Land Affairs, 1997). There have been three distinct iterations of land redistribution policy since 1994. In the first policy iteration, the redistribution programme provided small grants to poor, rural applicants to enable them to purchase land for small-scale farming (Hall and Kepe, 2017). In the second policy iteration from 2000, the policy was to provide larger grants to emerging black African farmers who were more likely to succeed commercially. These emerging farmers were given grants to purchase equity in commercial operations or create joint ventures with white farmers or agribusinesses (Boudreaux, 2010). The programme received criticism for this shift, which was described as ‘deracialisation’ commercial farming rather than broadly transforming land ownership, and as being more accessible to those with political and social connections (Boudreaux, 2010). Hall states that this is consistent with broader changes in macro-economic policies and a new configuration of class interests evolving due to an emerging black middle class (Hall, 2004). As of 2011, the third policy iteration has seen the state itself become the ‘willing buyer’ who ‘redistributes’ this land to beneficiaries, without actually transferring title to those beneficiaries despite their widespread belief that such a transfer will take place (Hall and Kepe, 2017).

It is interesting to observe that in this third iteration, the government has moved away from the policy of avoiding state ownership of land as laid out in the *White Paper on Land Reform*. Though the state maintains the ‘willing buyer, willing seller’ principle, Hall and Kepe note that ‘state leasehold has replaced the original private ownership model’. This presents a political risk in the future, as beneficiaries realise that they are unlikely to receive full title to their lands, although such conditional tenure may also be seen to serve as a political means through which to control black rural populations (Hall and Kepe, 2017). This also seems to invite significant potential for corruption, as political elites may distribute land for their own purposes or seek to take other advantage from the state ownership of land.

The Controversial ‘Willing Buyer, Willing Seller’ Principle and the Slow Pace of Land Reform

The ‘willing buyer, willing seller’ has become a central sticking point in South African land reform policy. Lahiff notes that the concept entered the political discourse between 1993 and 1996, having been absent from the *Ready to Govern* policy statement of 1992, which called for expropriation, and from the *Reconstruction and Development Programme Policy* of 1994. However, by the time of the *White Paper on Land Reform* in 1997, the market-based principle had become ‘a cornerstone of the

policy' despite not being required by the Constitution, which allows for expropriation with compensation (Lahiff, 2007).

Persistent doubts have emerged about the 'willing buyer, willing seller' principle, with concern that adherence to the principle it is slowing down redistribution efforts (Gumede, 2014). Its neoliberal economic underpinnings have also been put forward as the reason that the reform process has become a 'shallow distributive model of justice' rather than the economic and social saviour it promised to be (Kepe et al., 2011). Evidence shows that landowners are only likely to enter into land reform transactions where they are disposing of poor quality land or cannot dispose of it on the private market; exposing how the 'willing buyer, willing seller' principle does not approximate real market conditions (Lahiff, 2007). The constitutionality of the principle has also been raised, since current policies could be seen as failing to adequately satisfy the Constitutional requirement that the State take 'reasonable' measures to enact land reform. Indeed, the Constitutional Court has stated that the Constitution requires the state not to 'over-emphasise private property rights at the expense of the state's social responsibilities' (de Vos, 2013).

The three iterations of land redistribution policy are evidence that South Africa has not had a clear policy direction or plan for effecting land reform. Lahiff states that this is a result of 'competing imperatives and contending political forces' leading to a 'messy compromise': the debate continues at an abstract level amongst politicians whilst the practical struggles of the almost voiceless rural poor are ignored (Lahiff, 2007).

Fraser argues that South Africa is affected by a 'colonial present' as a result of the continued white monopoly on technical and entrepreneurial agricultural skills. This colonial present and the continued power and influence of white capital can be seen particularly in the policy of promoting joint ventures between emerging black farmers with white commercial farmers or agribusinesses, and the continued promotion of a commercialised agricultural sector that is reliant on white experience (Fraser, 2007). The use of redistribution funds to, directly or indirectly, support white commercial farmers clearly raises significant questions as to the intentions of the politicians and officials involved (Hall and Kepe, 2017).

Where land has been redistributed, there is evidence that the majority of agricultural projects have not used the land productively nor have they created the employment opportunities envisaged, due to a lack of financial and institutional support from the Government (Kloppers and Pienaar, 2014). The overall orientation of the redistribution programme towards commercial farming has also limited the progress of smallholder farmers, by redirecting public funds that could be used to support such smallholder farmers (Kepe et al., 2011).

A Move Away from 'Willing Buyer, Willing Seller' towards Expropriation with Just and Equitable Compensation

Following sustained controversy over the slow pace of land reform, a National Land Summit was held in 2005 where the Government accepted that it should examine a move away from the 'willing buyer, willing seller' approach. Lahiff notes that this was an attempt to placate the rural poor

through promises to move beyond the market-led approach, despite assurances at the same time to the commercial agricultural sector that policies will not change (Lahiff, 2007).

The protection of the white commercial agricultural sector is stated to be supported by business interests and even by elements of the Department of Agriculture and the ANC, who resist radical agrarian reform and propose the ‘deracialisation’ of commercial agriculture to maintain political stability (Lahiff, 2007). As a result, Atuahene argues that the ANC has failed to uphold the ‘liberation bargain’: white landowners have retained their property while black Africans have received comparably little redistribution (Atuahene, 2011).

More radical and populist voices have called for widespread land expropriation with minimal or no compensation, including from within the grassroots constituency of the ANC (Lahiff, 2007). The argument that ‘whites’ stole the land and that it should be returned is powerful to the rural poor, and the failure of the ANC to respond to the needs of its political base has been characterised as puzzling from an ethical perspective but also understandable, as the costs of political inaction have been low due to the disempowerment of these communities and their historical ties to the ANC as a liberation movement (Atuahene, 2011). The idea that ‘to be black is to vote, and to vote is to vote for ANC’ has until recently allowed the ANC to dominate South African politics, despite their lack of service delivery to the poor, although support for the ANC has declined in recent elections (Steinberg, 2008).

Following the expulsion of Julius Malema from the ANC Youth League, and his formation of the Economic Freedom Fighters party (EFF), the issue of radical land reform has risen to the fore in public debate. Malema previously praised the expropriation of land in Zimbabwe and his brand of populist politics has proven popular with an increasing portion of the electorate who have grown disillusioned with the ANC. The EFF has called for widespread expropriation of land without compensation, a move that would require a Constitutional amendment.

It is alleged that the political threat posed by the new EFF party and growing support for the main opposition party, the Democratic Alliance (DA), has spurred the ANC into re-examining the land reform issue and putting forward new policies in the spirit of ‘electioneering’ (Nicolson, 2013). The *Restitution of Land Amendment Act 2014* was enacted by Parliament to extend the period for land restitution claims beyond its original 1998 cut-off, however this bill was ruled unconstitutional due to a lack of public consultation and the need to clear the outstanding backlog of claim from the original claims period. The *Expropriation Bill* has also yet to be enacted following procedural issues but would provide for a move away from the ‘willing buyer, willing seller’ principle and allow for expropriation with just equitable compensation, thus remaining within the confines of the Constitution but marking a fourth iteration of land redistribution policy.

It has long been understood that historical inequalities and racial divisions can serve as useful tools for political mobilisation, and it has been noted that ‘questions about *whose land* this is are becoming entangled with questions about *whose country* this is’, further increasing the ‘racialisation’ of politics (Toit, 2014). Cousins warns of the danger that a ‘simplistic form of populism takes hold, emphasising racial disparities at the expense of class and gender-based equalities’ as the land reform debate becomes more heated (Cousins, 2016).

Expropriation Without Compensation for Political Gain?

Whilst the Government has been attempting to reform the land redistribution policy, it has until very recently ensured that such reforms would remain in keeping with Section 25 of the constitution and resisted calls for expropriation without compensation. However, recent political events have raised concern that the ANC may change its policy, and in turn amend the Constitution, to allow for expropriation without compensation in order to achieve political gain.

In the 2017 State of the Nation Address, President Jacob Zuma highlighted the importance of land reform, noting that South Africa has merely succeeded in transferring 9.8% of land to black Africans, a far cry from the 30% within five years that was targeted in 1994 (Zuma, 2017). Following this address, in February 2017 the EFF called for a constitutional amendment to allow for land expropriation without compensation and asked for the ANC to vote alongside the EFF so as to reach the two-thirds majority of Parliament required to amend the Constitution (Herman, 2017). The ANC refused this offer stating that it was contrary to its policy, and that expropriation should only be carried out in the interests of the public, not for political purposes (Herman, 2017). This seemed a clear repudiation of the calls for expropriation without compensation, until President Zuma reprimanded the ANC, his own party, for refusing the EFF's offer in unscripted public remarks in early March 2017: calling for 'black parties' to unite on land reform (Merten, 2017). This would seem to be an attempt to unite both parties against the DA, traditionally seen as a white party, who achieved significant gains in local elections in 2016.

That the comments of the President go against his own party's policy is an extraordinary political move and has been described by the DA as the President going 'rogue on land reform' in an attempt to excuse the failures of Government (Maimane, 2017). The ANC itself also responded with shock to this contradiction from its leader and restated that expropriation without compensation is not a part of its policy platform (Merten, 2017). The EFF appears to have deftly taken advantage of the widening divisions within the ANC as it struggles to hold on to credibility in the face of poor leadership and continuous controversy (Nicolson, 2017). However, the ANC later softened its repudiation of President Zuma's comments, and in the head up to an ANC policy conference and elective conference in 2017, the land reform issue appeared to be a political fault line that the President hoped to take advantage of.

Conclusion

An interesting perspective has been raised by Toit, who posits that we should view the failings of land reform through a historical lens, as it is difficult for policies to succeed when they are entangled with the psychological aftermath of apartheid: land reform concerns injustices which come to stand for apartheid, the claimants become the victims of apartheid and redress is expected to serve a larger healing function in a country still struggling with racial divisions (Toit, 2013). Whilst such conflation of the psychological trauma of apartheid and the land reform question are bound to complicate the issue and this lens has relevance in considering the wider debate on the importance of land reform, it does not excuse the slow pace of land reform that seems to stem from political differences and institutional failings in the South African government. Indeed it appears

that ‘in the process of trying to remedy inequality, the ANC has instead exacerbated it’ (Atuahene, 2011).

With recent moves towards a policy of expropriation without compensation that appear to be politically motivated, land redistribution seems likely to become a more divisive issue in South African politics going forward. One can only hope that more considered debate on the issue will prevail, as depriving landowners of their property rights without any compensation can only foster further divisions in an already deeply troubled society.

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Transnational corporations, through the drivers of globalization, have elevated India's outsourcing sector

Dinnaga Padmaperuma

The resilient expansion and interconnection of the global landscape via globalization currently is not a new phenomenon, but rather everywhere and complex. Outsourcing proves to be a worthy example, yet it is important to consider at what cost. Using theories of economic geography, it is understood that outsourcing not only forms a deep inter-relationship with globalization, despite conflict by opponents of globalization, yet further generates its effects locally, whether they be positive or negative. To note, within this analysis, the paper assumes globalization to be the primary driver behind transnational corporations. Given this, the essay hopes to provide a balanced discussion, considering as to how the drivers of globalization provide an ideal environment for transnational corporations, the tools elevating India's outsourcing sector. To substantiate the premise the pathways of globalization are considered: trade liberalization, cost disparities, and technological advancement. Conversely, this discussion evaluates the cause of spatial inequalities as a result of transnational corporations. By analysing the direct and indirect consequences of the clustering of companies. Importantly, this paper acknowledges that India is a multilingual, multi-ethnic and multi-cultural society (Mishra & Nayak, 2006) with significant economic sectors, however, for the sake of reducing complexity, the adverse socio-economic effects of globalization as a whole are not considered in this study.

Within this paper, we understand outsourcing as 'moving a business function of an organization to a third-party provider' in a different country (Bulajic & Domazet, 2012). Subsequently, globalization remains a process 'encompassing the causes, course, and consequences of transnational and transcultural integration of human and non-human activities' (Al-Rodhan & Stoudmann, 2006). Therein, it is understood that growing economic interconnectedness of different regions (Dicken, 2007) has contributed to this rise in outsourcing, within the context of international trade liberalization.

Extensive trade liberalization took place in the late twentieth century, prior to which, developing countries pursued protectionism (Pavcnik, 2009). To maintain superiority within this global landscape, developed nations brought this forth in two phases. First, through the formation of 'macro-regional integration' (Sokol, 2011), such as the European Union. Such coalitions brought mutual foreign trade agreements, reduced tariffs and other such benefits. Second, where globalization took effect, there were efforts to promote economic cooperation globally (Coe, et al., 2007), in the formation of bodies such as the World Trade Organization (WTO). Significantly, the WTO-enforced the TRIMs agreement allowing foreign corporations to operate with reduced pressure, compelling many nations to withdraw restrictions upon foreign investment (Raman, 2014). Yielding three significant effects upon the Indian economy: stronger competition enforced domestic firms to improve allocative efficiency and lower cost-price markets (Epifani, 2003); reduced trade barriers made existing imports cheaper, whilst allowing access to newer inputs – generating aggregate productivity improvements (Pavcnik, 2009); and the increased threat of

foreign firms raises innovation incentives allowing productivity to increase without influencing the production process (Aghion, et al., 2006). Notably, trade liberalization proved invaluable to India as it coincided with a phase of trade reforms (post-1991), and ultimately formed the basis for forthcoming trade and investment.

The disparity in the cost of production contributes to the arrival of multi/transnational corporations (M/TNCs). In considering the Marxist-approach, we understand that capitalists act upon a profit imperative. Whereby they accumulate *surplus value* through the exploitation of low cost of production. This *surplus value* is the difference between the value labour provides and the exchange value of labour (Craib, 1997). Deriving *surplus value* is fundamental to economic survival. The substantial wage discrepancy or supply of skilled labour between USA and India provides clear comparative advantages to the latter (Balatchandirane, 2007). Pricing flexibility provides TNCs, the independence, and originality in managing their expenses, absorbing larger profits. Such corporations have proved vital to the Indian outsourcing sector as they have the ability to 'coordinate and control operations' without full ownership of resources (Sokol, 2011). Consequently, forming the basis of restructuring key economic sectors witnessed similar to the post-World War II phase, reinforced by advances in technology. Yet, prominently, firms never 'disperse' evenly but rather cluster in set locations, to further exploit similarly skilled labour amongst other factors.

Combined with reductions in the cost of production, the global market experienced rapid enhancements in technology; further perpetuating globalization through a reduction in the space-time convergence.

The improvement of communications and transport technology had far-reaching implications for the spatial organization of economic activity (Dicken, 2003). Thereby drastically reducing the space-time convergence, reinforcing the aforementioned reconfiguration of economic activity. Such processes led to the extensive deindustrialization of developed nations, and the rapid industrialization of emerging economies. Notably, this facilitated concentration in the *new international division of labour*, where greater skilled tasks of routine nature were outsourced, value-added manufacturing for instance. Through improvements in transport systems globally, for example increased efficiency in containerization or air freight, manufactured goods are able to reach their destination promptly. Alongside this, countries exhibiting high investment in education/research (Storper & Leamer, 2001) and an extensive supply of cheap labour became ideal situations for routine intellectual production, key examples being the Asian Tigers. Considering India, academics propose a '*Newer International Division of Labour*' (Coffey, 1996), where developing countries have exalted their human and technological capital (Hutchinson, 2004); enabling them to attract the services sector from superior nations, resulting in relocation. Rapid developments in technology facilitated this change. For example, call centre outsourcing albeit possible was previously not economically viable. ICT outsourcing is prevalent in India, not only due to wage differentials yet also due to the ability to utilize 'a vast pool of skilled and talented human resources' (Outsource 2 India, n.d.), who speak English proficiently. Allowing companies to efficiently allocate their resources to more pressing sectors, whilst outsourcing the now 'basic' jobs

elsewhere (Gonzales, et al., 2004). These companies, TNCs, are tools that carry out the effects of globalization.

Considering integration, the activities of TNCs are seen as the agents of globalization that facilitate economic growth through interconnectedness, ultimately cementing India's position as a striving economy. It is understood that as barriers to trade and capital reduce, TNC's increase their presence (Shikhare, 2015) and influence. To exploit geographical differences, these substantial companies have begun relying upon *knowledge-intensive business services (KIBS)* to suppress growing demand. Although KIBS were traditionally prevalent in core economic centres, dispersal has begun to take form in other countries based upon this capitalist outlook. Essentially companies providing such business services form further TNCs in their own right (Sokol, 2011). This is conveyed in the Indian export of services, starting at the low-end data feeding, and onsite projects in the 1980s, gradually moving towards the high-value offshore niche developments, and software consultancy services (Patibandla & Petersen, 2001). This yielded numerous benefits: the increasing flow of goods/services; service trade surplus (Shikhare, 2015); and significant injections of foreign direct investment (FDI) in the form of financial capital and reinvested earnings (Wyrzykowska, n.d.). Importantly a number of the spillovers of TNCs effects act as a positive feedback, contributing to India's rise as an outsourcing nation. For example, diffusion of knowledge combined with ideal market conditions improve the skills of workers, resulting in generous income growth. This prospect of higher wages creates an incentive for local manpower to acquire the said skills, which expands the human capital in the region. Essentially this multiplier effect, as greater factor inputs have been added, will create an incentive for increased FDI inflows via newer operations of TNCs (Patibandla & Petersen, 2001).

Having discussed how globalization leads to an increase in outsourcing, we now seek how the spatial positioning of TNCs cause spatial inequality. Firstly, as aforementioned, the dispersal of TNCs isn't uniform but clustered into *central places* or *market areas* where firms exploit cost and demand linkages (Puga, 1999). Such a phenomenon is not a coincidence, merely a profit-driven action, finally leading to firms locating close to each other (Sokol, 2011). An example, Bangalore, boasts a series of clusters similar to Silicon Valley. Therein, benefit from *agglomeration economies* – benefits derived from similar firms (industry-wise) co-locating in precise locations, such as increased productivity per worker or employment of external services (cleaning, accounting). Further, the ability to exploit *traded and untraded interdependencies*, (Coe, et al., 2007) tangible benefits from prescribed commerce, and more intangible benefits such as casual discussion of recent innovations based on informal links between economic agents. From a neoclassical outlook, unless regions have identical exposure to trade and similar comparative advantage, given clustering, spatial inequality will likely worsen (Kim, 2009).

Here we assume the theory of *cumulative causation*, wherein one event triggers a self-reinforcing mechanism producing greater polarization that often occurs in two phases. The following example will explain such: as aforementioned, areas such as Bangalore, scattered with *agglomerations*, often will exhibit a multiplier effect. The initial growth and development of agglomerations will initially attract and promote further clustering of firms, which in turn will induce increased employment and

consumption of products. Beyond this, newly formed demand will be met with an improved supply, because of government infrastructure upgrades and increased agglomerations thus, once again, attracting firms.

Secondly, as regions experience losses of firms, cumulative causation will work adversely (Sokol, 2011), through lost employment and out migration. Such effects remain evident; given wages in Bangalore were 70% higher than the national average in 2010 (Dehejia, 2011). Fundamentally, reducing the attractiveness of more peripheral regions and diverting young and skilled labour from these lagging inland zones – a *backwash effect* – a flow of capital and labour from developing to developed areas. It is clear that India's post-1991 growth has not reached the roots of the population. The entirety of spatial inequality cannot be attributed only to clustering. Although within this discussion, having analysed its direct repercussions, now we evaluate its indirect knock-on effects.

Successively, the supposed 'end of geography' through developments in technology, albeit a driver for global interconnectedness, proves another factor behind spatial inequality. Assuming the 'end of geography' theory, many would consider the role of economic development more attainable as advanced technology has aided the compression of space and time. For example, ICT's ability to replace existing physical capital and labour to transmit data instantaneously through the internet. Yet despite this, realistically it is unlikely that improved technology will replace physical goods or movements. An adequate example being, e-commerce, although we can now purchase goods instantly there now exists an added transportation procedure that was previously not there. Further, it must be considered that despite time-space compression advancing, it is extremely unlikely to be evenly distributed (Sokol, 2009).

To understand the cause, we return to the previous argument of cumulative causation, clustering ultimately induces a divided pattern termed *core-periphery* (Krugman, 1991). Technological advancements remain key, as impacts remain related to FDI. Therein, it is not strange that developments would centre (in developed and developing countries), where they may exploit increased premium on skills and substitute away low-skill inputs (Birdsall, 2007) – *core clusters*. Technological progress thus increases the demand for higher skills, so as to supply the latest firms with adequate labour but further an ideal environment for production. With regard to India, such theories are confirmed. Tamil Nadu and Andhra Pradesh (Indian states) are more 'advanced' than Bihar and Uttar Pradesh (Rao, 2005). Whilst globalization has been scarce, if not bypassed the Northeastern region; the region exhibits, an inland location, being landlocked and having small markets/cities with weak economic and infrastructural bases. Saitluanga attributes these aspects to a lack of a core city/area in the northeast region and presence of a significant informal sector, incapable of integrating externally (Saitluanga, 2013). In Bangalore conversely, residents, directly/indirectly, provide infrastructure and amenities, such as security, parks, and private schools. While the local government strength ensures that the city and state provide better than average power and water supply (Dehejia, 2011). Simply, peripheral adjacent regions will be devoid of such advantages, as the backwash persists, allowing core zones to further perpetuate their clusters. Eventually, persistent uneven ICT infrastructure results in a *digital divide*, a lapse in opportunities experienced by those with imperfect accessibility to technology (Rao, 2005). Therein, we witness

the birth of another self-reinforcing mechanism, which may worsen inequality. Hence, we understand that globalization is selective and often imbalanced; the diminishing absorptive capacities (skilled labour, infrastructure) of these regions convey this.

This discussion proved captivating, as it evaluates the ever-evolving concept of globalization in the confined framework of outsourcing. We understood how the forces of globalization were responsible for the development of India's outsourcing sector; yet further highlighting its more adverse effects.

To summarize, the discussion confirmed the premise by forming an understanding as to why transnational corporations arrive. This was evaluated through the individual forces of globalization; trade liberalization, cost differentials and advances in technology. In contrast, the discourse went on to consider how the specific clustering of transnationals, and how this may contribute to spatial inequalities. To evaluate this, the direct impact of clustering through the theory of cumulative causation was deliberated, and subsequently the indirect costs by analysing the adverse role of 'the end of geography.'

Personally, I must admit the topic proved unorthodox, as it is difficult to confidently conclude that globalization had no part in the Indian outsourcing industry. Thus, by accepting global integration, it allows this analysis to convey that globalization via transnational corporations' cause increased spatial inequality. In a hopeful sense, this study was devoid of the greater beneficial impressions that globalization has, for example, interlocking different cultures; and the other possible causes of inequality. Therein, understanding the complexity of this dilemma, and the need to consider each aspect carefully. But also, to ensure we understand the greater picture. Finally, an extension to this study; the possibility of analysing whether the Indian government/globalization itself has mechanisms to combat this growth in inequality.

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Landscape change in Clare Island, 1838 – 1915: A study of the Glen townland

Aisling O'Boyle

Historical geography enables the researcher to understand how the human landscape of a place has changed over time. By combining retrospective and reconstructive approaches to observe present day landscapes and documents from the past, it is possible to reconstruct time slices. Even when presented with a limited range of cartographic sources and field evidence, by combining this information with the history of the region the historical geographer can gain a good understanding of changing landscapes.

The Clachan Settlement and Rundale System as depicted on the First Edition OS Map

Clachan settlements and the associated Rundale system are often thought of as a primitive, ancient form of settlement when in fact it was a “sophisticated response to specific ecological conditions” that maximised the output of a fragile environment (Whelan, 2011, p.89). Therefore, due to the environmental conditions in the West of Ireland, the rundale systems were in existence for much longer than in the rest of the country (Johnson, 1994). The rundale system was based on a common, unenclosed infield and mountain commonages. The families living in the clachans were generally closely related and shared implements and livestock (Buchanan, 1973). Although the Glen clachan had been dispersed by 1911, these ties of kinship can still be observed in the 1911 Census (National Archives of Ireland, 2016). The clachan settlement at Glen is by far the largest on the island according to the Ordnance Survey 1:10,560 1838/1840, First Edition map. There are approximately forty dwellings in the Glen clachan compared to the approximately twenty dwellings in the Capnagower clachan, the next largest settlement. The Glen clachan seems to have developed on the



division between the infield and the outfield. The dwellings hug the rough pasture to avoid building on the good land. The land was to be shared between a large number of people, so it was critical to ensure the land was used in the best possible way. The dwellings are distributed in a linear pattern unlike the Fawnglass and Capnagower clachans where the dwellings are more clustered. It is possible that the Glen clachan formed from two clusters coming together – one from the north and one from the south which would also explain the apparent ‘gap’ in the centre of the clachan (see Fig.1). According to Buchanan (1973, p.594) the clachans grew as the population increased and the tendency for subdivision led to new houses being “added to the existing nuclei”.

Field Evidence of the Clachan Settlement

A relatively large amount of evidence survives from the Glen clachan in the present-day landscape. Remnants of houses, house foundations, vegetable plots and clay mearings can be observed in the Glen townland. While completing the field survey, GPS devices were not available, so all grid references were estimated based on the East-West Mapping, 1:7500, 2015 map.

At L 706 853 the remnants of three houses were found. These buildings can be identified on the 1838/1840 map signalling that these buildings date to the pre-famine period. The houses were built on a platform so rise above the land used for cultivation. This may have been to protect the crops or could indicate that the water table rose in winter and the houses needed to be raised so they were not damaged. Uplifted foundations can be identified as well as some old walls. It is thought that this may be where the clachan originated.

The remnants of a cluster of houses is found at L 705 863. These houses are situated on the border between the infield and the outfield to maximise the amount of the infield that could be cultivated. The foundations of approximately four houses were found, however more examination would be required to determine the precise number of dwellings that existed at this site. An interesting feature of the site is that a shed has been built on top of the foundations of an old house (see Fig.2). This is a phenomenon that can be seen across the Glen townland, as well as in the Capnagower townland. Adjacent to the dwellings lie some cultivation ridges which seem to have formed a small, enclosed vegetable garden, or *garraí* for the families who lived there (Mac Cártaigh, 1999). The settlement would have been surrounded by a permanently cultivated infield which was worked by all those living in the clachan (Whelan, 2011).



Figure 2: A modern shed built on the foundations of an old dwelling (Skelly, R. 2016)

Field Evidence of Cultivation Ridges

Cultivation ridges are a ubiquitous topographical feature of the island. Cultivation ridges were generally made from layers of seaweed, sand, manure and soil and were used for growing crops (particularly potatoes). The cultivation ridges allowed farmers to grow crops on the otherwise unsuitable wet, poorly drained, leached, and exposed soil of the western coast. This was because cultivation ridges allowed farmers to make “minute adjustment to soil type, slope conditions and rockiness” to ensure “that there was no waste of soil or space” (Whelan, 2011, p.91) It was found that seaweed acted as an effective fertiliser and Whelan (2011) asserts that larger rundale villages are often found within five kilometres of the coast for this reason. This could be a reason as to why the Glen clachan is much larger than the others on the island.

The cultivation ridges on Clare Island are approximately five to six feet wide but vary dramatically depending on the relief of the land and the drainage. Between the ridges is a trough called a *sheugh* which provides drainage (Mac Cártaigh, 1999). Cultivation ridges also generate their own micro-climate with air flowing from the top to the bottom of the ridges reducing susceptibility to frost (Whelan, 1999).

The extensive spread of cultivation ridges into the steep high ground at L 707 849 demonstrates the high level of population growth prior to The Great Famine (see Fig.3). The rundale system became overstretched, and new, migrant families who had been compelled to leave the mainland were forced to move into the upland areas. Small farmers began to occupy upland areas across the country, the height to which they climbed being determined by “the presence of glacial drift... and on the availability of turf” both of which are present on the Clare Island uplands (Whelan, 2011, p.90). There is little pattern as to where the cultivation ridges are placed, rather the land was under such pressure that ridges seem to have been constructed wherever there was room, with rural dwellings on upland areas above 150m increasing five times as fast as on lowlands (Whelan, 2011). It is important to note when examining the landscape that cultivation ridges run down the slope while terraces caused by soil creep run across the slope.



Figure 3: Cultivation ridges are evident across the island, including on high, sloping ground (Skelly, R. 2016)

Congested District Board Reorganisation as depicted on the O.S. 1:10,560 1915 Map

By the early nineteenth century, the rundale system was no longer in existence across most of the country (Johnson, 1994). This was due to a number of factors, including the move to a money-based economy, the wishes of landlords, and the political ideology of the time. However, the rundale system still existed in the very rural parts of Ireland and this was viewed as a major problem by the British government because many people in these regions were living in abject poverty. The Congested Districts Board (CDB) was set up by the British Government in 1891 to improve “the standard of living in those areas of western Ireland where population continued to press hard on resources” (Johnson, 1994, p.55). Clare Island was bought by the CDB in 1895 and it became one of their “showpieces” as they remodelled the entire human landscape (Whelan, 2011, p.102).

The most obvious change between the 1838/1840 map and the 1915 map is the complete disappearance of the Glen clachan. This can be observed at the site of the clachan because all that remains is an abandoned farmhouse (see Fig. 4) and the foundations of the old dwellings. The commonage of the rundale was re-organised into individually owned fields which suited the government as it made taxation more transparent. On the mainland the CDB were adamant that a “squared farm” pattern best, however in the case of Clare Island, a “ladder farm” or “striped holding” pattern was adopted (Buchanan, 1973, p.594). This pattern meant that the fields created were long and narrow, covering a variety of different environments; from sea shore, to fertile flat ground, to hill side. This was preferred by the tenants because “it preserved the rundale principle of equal shares of good land and bad in holdings which extended from valley bottom to hill margin” (Buchanan, 1973, p.594).



Figure 4: Abandoned farmhouse at the site of the old Glen Clachan (Skelly, R. 2016)

Patterns and Processes of Change from 1838/1840 to 1915

The landscape of Clare Island changed significantly between 1838/40 and 1915. The two factors that influenced this change were a dramatic population growth in the first half of the 19th Century, the Great Famine of the 1840s and the Congested Districts Board's work from 1895 into the early 20th Century.

Prior to the Great Famine, the population of Clare Island, similarly to the rest of Ireland, grew at an astonishing rate with the population reaching a high of 1,600 prior to the famine, and subsequently falling to 545 by 1851 (Whelan, 1999, p.82). The flexibility of the rundale system and the ability of clachans to expand and contract in size allowed this population growth to occur. However, by the end of the 1830s, the clachans had "swollen beyond a functionally desirable size" (Johnson, 1994, p.50). Due to the prevalence of subdivision, demographic expansion was primarily focused on the most marginal land "previously considered too poor to be permanently settled" (Whelan, 1999, p.77). On Clare Island, the limit of cultivation rose from approximately 140m in 1650 to approximately 250m in 1840 (Whelan, 1999). This expansion altered how the clachans operated and stretched the system beyond its limits.

From the 1820s onwards, the economic well-being of the island was in decline. Following the end of the Napoleonic Wars, agricultural prices were halved, the fishing industry off the west coast floundered, the linen industry moved production to factories, and there was a series of wet summers and bad harvests (Whelan, 1999). Due to this, dependence on the potato grew "as the oat crop was increasingly assigned to the market" rather than being consumed on the island (Whelan, 1999, p. 81). By the 1830s, three million people in Ireland were entirely dependent on the potato, the majority being those in the rundale communities on the west coast (Whelan, 1999). This dependence on the potato can be observed by the number of cultivation ridges on the island. By 1846, blight had caused the potato crop to decay for several years and in July 1846 it was believed that over 200 families on Clare Island would starve unless immediate relief was provided (Whelan, 1999). As the population fell by 66%, houses were abandoned and the rundale system failed. By the time the Congested Districts Board acquired the island in 1895, the people had suffered a number of "crisis years" including 1845-1852, 1859-1864, and 1879-1884. These crises in animal and crop production led to the Land League crisis and in turn the CDB (Whelan, 1999).

The Congested Districts Board had the single largest effect on the human landscape of Clare Island. The CDB was part of the great Victorian wave of social reform (Whelan, 2011). As circumstances in western Ireland continued to decline, rather than leaving the landlords to sort the issues of their tenants as had been done in the past, state intervention began to be seen as imperative (Whelan, 1999). As previously discussed, the CDB set out a new settlement pattern for the island. The mountain commonage was separated from the newly privatised fields by a six-foot-high, seven mile long drystone wall. Tenants were granted specific plots of land which were divided by fifty miles of clay mearings running from the seashore to the wall (Whelan, 1999). Each farmer was granted grazing rights on the commonage specified in terms of 'sums'. A 'sum' was a cow or other beast over three years old, or the equivalent number of sheep which was set as six (Whelan, 1999). Dependence on seaweed as a fertiliser and peat as a fuel source continued into the twentieth century so each tenant was granted *cearta trá* (seaweed collection rights) and turbary rights (Whelan, 1999).

By specifying what each tenant was entitled to, the CDB encouraged an economic and market-based focus on the island.

The complete elimination of the Glen clachan demonstrates the power the CDB had in developing the landscape. Dwellings were relocated to the road in a linear pattern (Aalen and Whelan, 2011). This new settlement pattern meant that houses were spaced further apart separating farmers from each other so that fields would remain in private ownership.

The Contemporary Landscape

The contemporary landscape, while completely different from the landscape depicted on the 1838/40 map, is quite similar to the 1915 landscape. For example, it is probable that the house at L 709 852 is the same building as was on that site in 1915. The linear settlement pattern along the road is a result of the CDB re-organisation (see Fig.5). This type of settlement pattern can be observed across rural Ireland. The field distribution implemented by the CDB is still in place today, with farms running from the shore to the mountain. It is interesting to note that there is currently no one living at the site of the old clachan. There is an abandoned house which is thought to date from the early to mid-twentieth century and a shed presumed to be from the same time period.

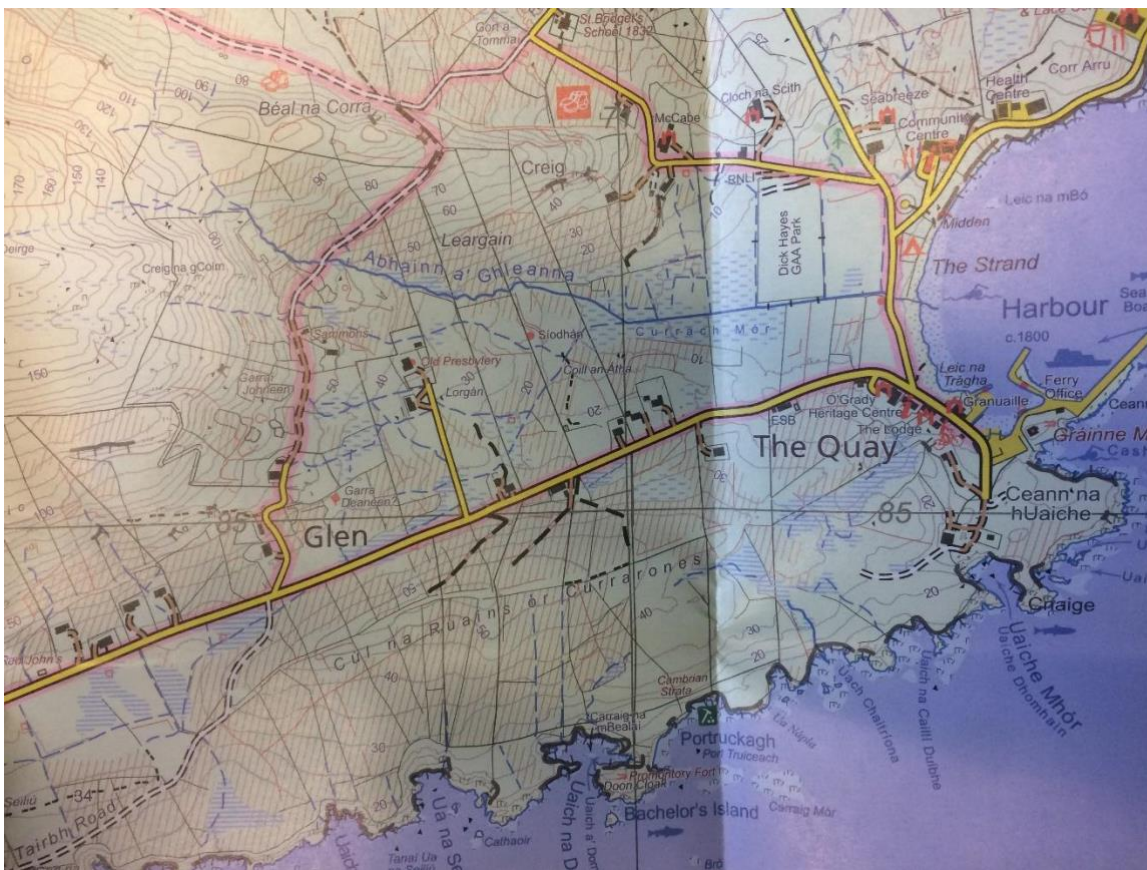


Figure 5: Section of Clare Island 1:7500 map (East-West Mapping, 2015) showing modern linear settlement pattern in Glen townland and long fields running from the seashore to high ground.

In the present day, changes to the landscapes are primarily caused by the proliferation of second homes. Since the mid-1990s the construction of second homes has been “concentrated in the rural and coastal parts of the peripheral west” along with other coastal regions (McManus, 2011, p.158)

Although there have been significant changes to the landscape of Clare Island over the last 200 years a degree of continuity can be seen. This can be attributed, in part, to the CDB arbitrators who appear to have had respect for the customs of the island and a willingness to work with, rather than against, the people (MacCártaigh, 1999; Whelan, 2011). It is observed that the landscape changes on the island follow a trend of punctuated equilibrium. There tends to be a stable process with small incremental changes, followed by a sudden shock which results in a new stable process.

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Do new global actors, such as sports corporations, have similar or increased authoritative power to governments over nation-states, when hosting sports events, as a result of globalisation?

Molly McGrath

Is there really a level playing field when it comes to the organisation of sporting events? This essay will demonstrate how there is not equality during the organisation and bidding processes of major sporting events, paying special attention to UEFA's European Championship. This essay will discuss how international relations has changed over time by looking at the rise of new influential global actors because of globalisation, the access to media and the commercialisation of sport. Countries that have hosted and will host mega sports events, such as UEFA's European Championship, the positive and negative aspects that are related to the event will be examined in terms of the power control UEFA has over host countries and whether these countries are specifically chosen. Finally, the ideas and theories discussed throughout will be highlighted by using the complex interactions between the Polish government and UEFA during the bidding process for the European Championships in 2012, as an example.

In the past, the primary realm of nation-states consisted of sovereignty. Sovereignty was the primary and overriding political actor in matters concerning international relations, major economic and political negotiations and matters concerning its nation's inhabitants. Traditionally, both government and sovereign would primarily deal with such matters. Historically, international relations were defined by conflict or co-operation among empires and nation-states (Baylis, Smith and Owens, 2014). The use of hard power - that is, an approach to international relations that utilised coercive power, military threats and economic pressure - was adopted during this time, (Włoch, 2012). However, this coercive and hard style of power has been replaced by a softer use of power, introduced by new "global governors." Soft power consists of a state's capability of forming allies and close associates. This allows the state to influence their confederates as a result of the attractiveness of the state's culture, political values and foreign policy (Nye, 2004). Additionally, in the book, *Who Governs the Globe?* by Avant, Finnemore and Sell (2010), the authors coined and provided meaning to the term "global governors" to explain the changes in international relations. Global governors are "active agents who want new structures and rules (or different rules) to solve problems, change outcomes, and transform international life". They are authorities that exercise power across borders for the purposes of affecting policy (Avant, Finnemore and Sell, 2010, p.1). These global governors, "create issues, set agendas, establish and implement rules or programs and evaluate and/or adjudicate outcomes," (Avant, Finnemore and Sell, 2010, p.2).

Although the state is the most authoritative and powerful actor, its monopoly concerning critical issues is no longer feasible. Today, nation-states consider "global governors" when deciding on key issues. States take the interests, values and the potential power of new global actors into account. There are complex sets of interrelations between the various kinds of governors that determine their power and status. These interrelationships can be collaborative or conflictual, (Włoch, 2012). Examples of new global actors and global governors include; The United Nations (UN), The World Trade Organisation (WTO) and The Union of European Football Associations

(UEFA). UEFA, although it seems unconventional, ought to be considered as an emerging, powerful, modern global actor as it is able to govern rules for global sporting events. Sport is an area where the interests of states and multinational corporations meet, thus UEFA has gained influential status as a global governor. The interactions between the contemporary global governors and the state, alter the way the state achieves and carries out external and internal policies. It is also claimed that these interactions undermine state sovereignty, this idea will be discussed in relation to mega-sports events, particularly in the case of the European Championships in Poland, between UEFA and the Polish government in 2012 (Włoch, 2012).

UEFA has gained its status as a global governor as a result to our consumer economy and society. Established in 1954, UEFA was set up as an international overseeing non-profit, non-governmental organisation made up of autonomous national football federations. In 1960 UEFA had a total of three employees who undertook tasks as the organiser of the pan-European soccer tournaments. However, UEFA has evolved since and has become a dynamic, hybrid international organisation that incorporates functions of non-governmental organisations and elements attributed to transnational corporations (Włoch, 2012). UEFA has risen to this high status as a result of globalisation and the commercialisation of sporting event.

Sporting events in the past were predominantly a peripheral, weekend activity. Today, there are matches being played on every day of the week, particularly football. Increasing corporate globalisation linked with globalisation of sports and media that is the growing popularity of sporting events across the globe and the growing coverage of sporting events across the globe, has led to the commercialization of sporting events, (Włoch, 2012). With greater media coverage more and advanced transmission technologies, sporting events are available around the world and thus, has resulted in the commercialisation of sport, has created some mega-sporting events and hence, has attracted major corporations to become involved in such spectacle, (Giulianotti and Robertson, 2004 and Roche, 2000). In 1980, televised football matches began to generate large profits. Within several years the revenue created through transmission was greater than ticket sales, (Włoch, 2012). The extensive global reach through media coverage has increased the scale of the events along with revenue potential for those involved in such events, (Cornelissen and Swart, 2006). This global reach of football, in particular, lead to the emergence of several powerful actors, thus, UEFA redefined its goals and modes of operation fearing marginalisation, with the introduction of several new powerful actors, (Holt, 2009). The once non-governmental organisation has grown in organisational structure at a yearly pace of 17% since 1991. Furthermore, between 1991 and 2008, UEFA's revenue generated from organising the European Championships has risen from €41 million to €1.3 billion, with 60% of the total deriving from media rights and 21% from sponsorship and merchandising, (UEFA, 2011, 2012). However, 2004 was the final year UEFA shared the profits with the host country of the European championships. Therefore, there is an alternative perception of globalisation as the power resides with global sport governors, rather than nation states, they use the extremely popular and lucrative revenue generator -that is- football matches to suit their own interests (Włoch, 2012). Yet, nation states continually compete in bidding processes to host these mega-events, although they will receive no profit revenue from ticket sales, merchandising and advertising, (Cornelissen and Swart, 2006).

Mega sports events which nation-states bid for may be defined as “complex affairs which originate from specific arrays of economic objectives, but which have political and social corollaries that usually extend beyond the event itself, (Cornelissen and Swart, 2006, p.1). These events are driven by a number societal elite, those in influential corporate and political positions, and aim to achieve particular developmental goals or ambitious growth projections, (Cornelissen and Swart, 2006). States view such events as economic and development vehicles that can drive the governments’ nation building plans, (Cornelissen and Swart, 2006). Nauright’s (2004) ideology of sport-media-tourism is adopted to advocate for this event driven economy. Mega sporting events can be used as spotlights by states to present themselves to a global audience that could attract potential future investors and tourists, through the global media platform.

Although there are multiple positive effects there are more drawbacks that come with hosting these events that are rarely considered. The drawback isn’t considered as nation states view hosting these events as a means to become involved in international relations in the globalised world with the hopes of becoming a potential key global political actor (Cornelissen and Swart, 2006). It has been reported that there have been fewer examples of success than failures for host countries, in terms of the host countries having to incur great debts from these events (Teigland, 1999). Host countries must have certain infrastructure in place, which will be discussed further, in order to host an event. In South Korea, ten new stadia were constructed with a price of US\$2 billion and Japan built seven new stadia at a cost of US\$4 billion, in order to host a mega event, (Cornelissen and Swart, 2006). Alas, these often cannot be used by the public following the event and can be left vacant, and left to decay (Preuss, 2007). Although it has been claimed these particular events will stimulate a positive effect on the surrounding local communities, it has not been the case in the past (Cornelissen and Swart, 2006). It is argued that resources used throughout the bidding process could be used more efficiently; allocating the money to social and economic development schemes to mitigate poverty, this occurred during South Africa’s bidding process for the World Cup in 2010, (Hiller, 2000 and Cornelissen and Swart, 2006). Jones (2001) criticises the costs of the bidding process for mega-sports events, and furthermore, the public costs affiliated with these events are not debated publically and there is no accountability, when the host country become indebted as a result of policy makers decisions, (Gamage and Higgs, 1997).

Roberto Alvarez, remarked that there may be a specific trend in FIFA’s, and other corporations, choice of host countries for in particular FIFA’s for the World Championships. Countries that are deemed institutionally and governmentally weaker and perhaps somewhat corrupt, (Włoch, 2012). These countries include South Africa in 2010, Brazil in 2014, Russia in 2018 and Qatar in 2022, (Włoch, 2012). By selectively picking these countries, shows how these influential organisations, such as UEFA or FIFA, can use these the weak governmental structures in these countries to gain extensive profits while the host countries believe it is a way to modernise the country, (Włoch, 2012). UEFA can set the agenda when countries are bidding to host such mega events. It is demanded by UEFA that certain structures and procedures are in place in order for the sporting even to occur in a particular country. It is imperative that adaptations are made in preparation of the events, these include, infrastructural (stadiums) and legal (laws surround the event), that meet the requirements of UEFA (Włoch, 2012). One such requirement demanded by UEFA is that the organisation is exempt from paying taxes on its income, profits and turnover, in relation to the event, (Włoch, 2012). If potential host countries do not adhere to the conditions set or

meet the necessary requirements, both authoritatively and arbitrarily, stripping the country of the event is threatened, which developing countries do not wish to occur as they will lose out in the opportunity attracting future investors through global media outlets, (Włoch, 2012, p.307). For example, in South Africa in 2010, the 2006 proposal for the FIFA World Championships was edited. The number of stadiums was extended from nine to thirteen, in order to fulfil the requirements of FIFA and not to lose in the bidding process, (Cornelissen and Swart, 2006). Thus, the host country must bear the expenses, without receiving any financial aid or share of profits made by the rich corporations.

Events can impact the host countries' societies significantly but as the events are controlled by external sports corporations thus host countries governments are unable, or unwilling to alter the terms and conditions, (Hiller, 1998). Foster (2003, p.2), explains that global sports laws have emerged, *Lex Sportiva*, "a transnational autonomous legal order, created by the private global institutions that govern international sport." These sports laws are not governed by the legal systems in each country, therefore UEFA is able to be a decisive actor when creating global rules and regulations surrounding the sports events, (Foster, 2003).

These assertive laws implemented by corporations on nation states governments is seen vividly in the example of the European Championships in 2012 between the Polish government and UEFA. The initial clash between the Polish government and UEFA (and FIFA's) *lex sportiva*, occurred in 1998. The clash ensued over a move that was made by the Office of Physical Culture and tourism that was condemned by the football organisations, (Włoch, 2012). They threatened not to include Polish teams in international matches and hence the government withdrew after a few months, (cited in Włoch, 2012). Both corporate organisations often attempt to trump or interfere with state sovereignty when countries that are politically weaker are hosting mega sports events. Another example of this was seen in Brazil, when FIFA demanded the right to sell alcohol in stadiums during the world championships, (Segalla, Rodrigues and Morcandes de Moura, 2011).

UEFA was the designated external controller for setting standards and deadlines in host countries, (Włoch, 2012). To ensure the European Championships would be held in Poland, the Polish government legitimized UEFA's global governor role by equipping the organisation with power that equated to a sovereign, surrounding the processes of development in Poland and in Ukraine, (Włoch, 2012). Additionally, in 2008, the Polish Ministry of Economics established a specific group to study the requirements enforced by UEFA in order to adapt Poland to meet the requested requirements. Following this, a list of guarantees was presented to UEFA by the Polish government that included a timeline of infrastructure construction and also awarding UEFA unique privileges and making the corporation exempt from various taxes and laws, (Włoch, 2012). UEFA was exempt from CIT (Corporate Income Tax) and PIT (Personal Income Tax) during the preparations for the European championships in 2012, (Huczko, 2011). Furthermore, the Polish government provided UEFA with police screening and information on those who applied for security jobs in stadiums. It has been argued that this was breach of personal information, however the government had legalised UEFA's actions thus this could not be argued, (Włoch, 2012).

Finally, it was estimated that the Polish state would gain twenty-nine billion zloty (€7.25 billion) by 2020 from revenue generated from tourism and infrastructural development following the championship (Borowski, 2010). However, the cost of the construction of stadiums and other

investments for the championships in 2012 cost over a hundred billion zloty (around €25 billion) but UEFA did not ease the burden of the costs that came from hosting the championships. This shows that UEFA and other corporations alike utilise their influence to maximise their profits by hosting events owned by them in developing countries with weak government structures and imposing strict, costly, regulations upon the host countries without providing them with financial assistance.

In conclusion, it can be said that international corporate globalisation has led to the globalisation of sport, thus, leading to the rise of sporting corporations such as UEFA. This essay aimed to discover whether corporations can contest or trump sovereignty in host countries and it is evident that this is, in fact, true, there is not a level playing field when it comes to the organisation of sporting events. Corporations that may have started as non-governmental and non-profit have swiftly altered and incorporate elements of politics and economics to gain the most profits. Through media outlets, around the world, as a result of globalisation, these corporations have gained power and status, and sport in general has gained extreme popularity. Thus, these corporations can set the agenda by hosting mega sporting events in countries with less strict government structures, like Poland. By setting specific requirements, corporations such as UEFA generate maximum profits, while host countries believe that hosting the event will attract tourism and future investors into the country, although this may not be feasible as the host country must pay for the required infrastructure. New legal procedures are implemented for the owner and organiser of the event to be exempt from paying tax on the revenue gained. Therefore, it can be said that transnational corporations can trump sovereignty, particularly when it comes to sporting events and the laws that surround the events.

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Myths from Climate Misinformers: An Assessment of Michelle Bachmann's statement in the context of scientific literature

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“Carbon dioxide is natural. It occurs in Earth. It is part of the regular lifecycle of Earth. In fact, life on planet Earth can't even exist without carbon dioxide. So necessary is it to human life, to animal life, to plant life, to the oceans, to the vegetation. that's on the Earth, to the fowl – that flies in the air, we need to have carbon dioxide as part of the fundamental lifecycle on Earth.” – Michelle Bachmann, 2009

Within the sphere of US politicians, the climate change debate is habitually misrepresented by ‘fake or twisted science’ – especially within the republican domain. The concise reasoning behind this is unclear and may have numerous plausible answers. One answer may be that most politicians will not be around to suffer the consequences of climate change. The average age of Members of the House at the beginning of the 115th Congress was 57.8 years; and of Senators, 61.8 years – among the oldest in US history (Manning, 2017). The estimated effects of climate change which are modelled will not occur in these current leaders' lifetimes, for they will not be around in 50-60 years to reap the consequence of their actions. It is far simpler for most politicians to develop fields like unemployment and healthcare which are quantifiable and will have a positive influence on their re-election. So, when forced to choose between funding an oil pipeline or cutting back on fossil fuels, most current US leaders would choose the environmentally detrimental option for the sake of jobs and industry and, ultimately, their own career and self-interest. This also begs the question as to who represents the younger population, whom are generally more climate conscious; the youngest person allowed to sit in US government is 30 years old. Another obvious answer as to why politicians ignore climate friendly options is the economy. The industry behind fossil fuel production and consumption is monumental and a reduction in this could lead to unemployment and a reduction in profit in certain industries which rely on the fossil fuel sector. It is also hypothesised that there is some meddling between the oil companies and the Republican politicians whereby consistent climate denial by politicians is rewarded in some manner – perhaps monetarily. One can only speculate as it is doubtful that anyone would ever admit to this. Furthermore, many politicians have previous industry experience in the fossil fuel sector which undoubtedly presides bias over their environmental policy decision-making skills. Dunlap and McCright (2008) have also shown the party polarization is key to investigating the beliefs of the public with regard to global warming and climate change. It is evident that a top-down belief system occurs with the major influential being elected officials and party activists. One of these people is the Republican Michelle Bachmann, a former member of the US House of Representatives from 2007 to 2015. She is also currently considering running for the Senate seat held previously by Al Franken.

When considering Michelle Bachmann's 2009 statement on carbon dioxide, we must contemplate the true validity of the term ‘natural’ in her statement. By Bachmann's definition ‘natural’ could be defined as something that occurs in the earth itself, which could thus deem anything on earth natural. We could, by this logic, call a nuclear missile or a car natural, as their materials are derived from planet Earth. If, using the Oxford Dictionary definition for the word ‘natural’, we accept that it

is something ‘existing in or derived from nature; not made or caused by humankind’ (Shorter Oxford English Dictionary, 2007), it is evident that the current levels of CO₂ in the atmosphere are indeed not natural as they have been augmented over time by manmade activities like the burning of fossil fuel, and thus Bachmann’s statement contains little in the way of substance. The increase in CO₂ levels since the beginning of the industrial era is attributed to increases in burning of fossil fuels as illustrated by Figure 1. According to Friedlingstein et al (2010), emissions of CO₂ are the main contributor to anthropogenic climate change, and this is widely accepted by the scientific community. The level of debate on climate change has stooped to such a low amongst the political right in the US that substantive discussions regarding possible solutions are non-existent. It is difficult to debate against those who do not accept basic facts.

In 2017, Leiserowitz et al found that 71% of registered voters believed that climate change is happening (see Fig. 2). One could therefore argue that the current US government is not acting in the interest of the majority of its people, demonstrated by recent decisions like opting out of the Paris Agreement on climate, and approving the Dakota pipeline.

Bachmann’s argument supports the ‘more is better’ philosophy; that is, if more CO₂ is released by human activity, it would have a positive effect on the environment. This argument is based on the uncomplicated and attractive rationale that if plants require CO₂ for growth then more CO₂ should be beneficial. This would lend itself to the belief that our crops would be more productive and our flowers would grow faster and bloom brighter. This philosophy is not always correct. In the case of plants, some may see an increase in growth rate with more CO₂ due to an increased level of photosynthesis. However, this argument does not mention how, with an increase in CO₂, there will also be an increase in temperature and an increase in arid lands which would reduce the potential for plant growth in reality.

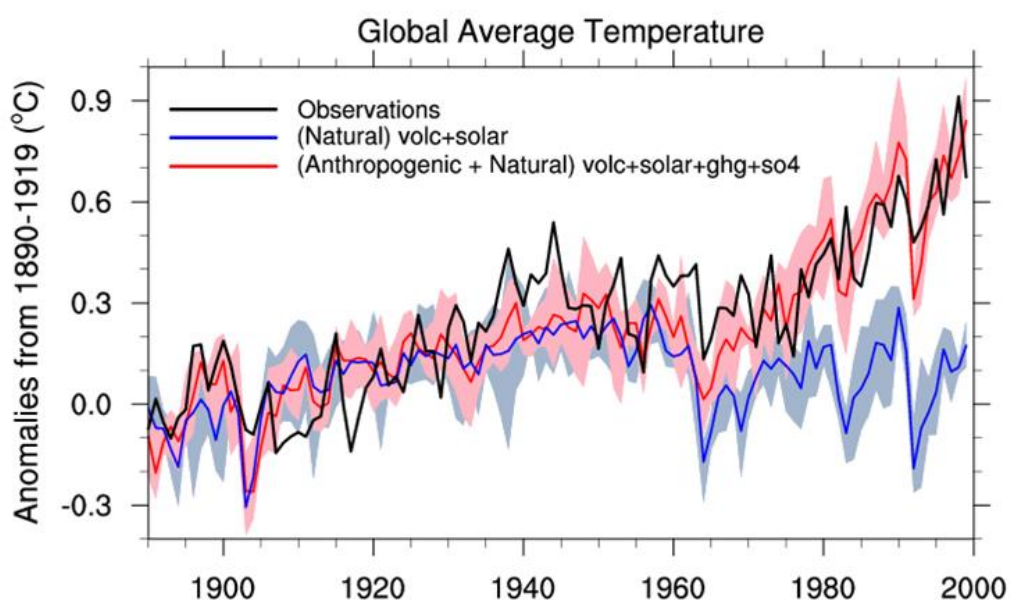


Figure 1: Modified graph from Meehl et al (2004) showing temperature increases.

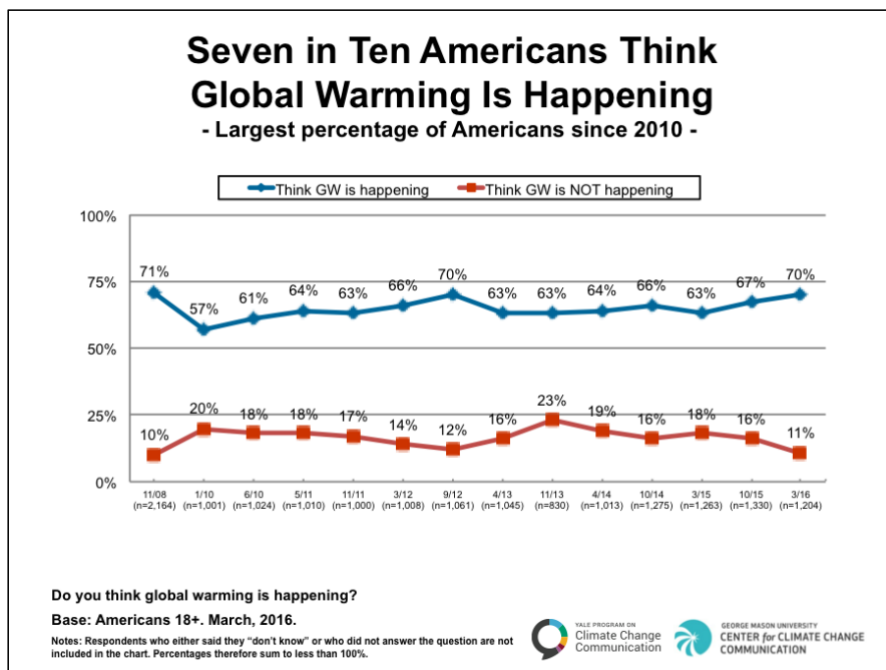


Figure 2: Graph of registered voters response to poll on global warming (Leiserowitz et al, 2017)

Plants require more than just a single component to grow. Plants require nutrients and water to thrive and with an increase in temperature and a decrease in water availability, there may be negative effects for certain plants in certain areas (Lobell et al, 2008; Luo, 2009; Zhao and Running, 2010; Challinor et al, 2010; Lobell et al, 2011). The drought and heat stress may cancel any potential benefits of increased CO₂ in these scientific predictions. Another point to note is that most CO₂ enhancement experiments in the past were carried out in enclosed greenhouses or individual growth chambers which have not been superseded by outdoor experiments such as Free-Air CO₂ Enrichment (FACE) studies. They occur in an outdoor setting and have a controlled release of CO₂ which is continuously monitored to maintain the required abundance of gas for study. These FACE studies are more realistic in their predictions than greenhouse studies as they allow for atmospheric conditions, pest access, interaction with other plants, and buffer zones. The FACE studies produce 50% less yield than the greenhouse studies with yields increasing by 12-14% under elevated CO₂ in FACE experiments (Leaky et al 2009; Long et al 2006; Ainsworth 2005). Several experiments have found that some plant species that respond positively to elevated CO₂ levels when grown alone experience decreased growth under elevated CO₂ when grown in mixed-plant communities (Poorter & Navas, 2003). One of the most important determinants of species' differences in response to elevated CO₂ is photosynthetic type. Most plant species (i.e. ~90%) utilize a photosynthetic process known as C₃ photosynthesis. Other species use either one of two physiologically distinct process known as C₄ and CAM photosynthesis. Rice and wheat are examples of C₃, whereas sugarcane and

corn are examples of C₄. The main difference is that they use different enzymes to collect CO₂ during photosynthesis. C₃ uses the enzyme RuBisCO. C₄ plants also use RuBisCO, but unlike C₃ plants, they first collect CO₂ with the enzyme PEP-carboxylase in the mesophyll cell prior to pumping it to RuBisCO. The significance of this is that CO₂ shows some benefit to C₃ plants, but no significant benefit to C₄ plants. In 1986 Cure and Acock used a greenhouse study to show excess CO₂ gave a 35% photosynthesis boost to rice and a 32% boost to soybeans (both C₃ plants), but only a 4% boost to C₄ crops. A specific plant's response to excess CO₂ is sensitive to a variety of factors, including (but not limited to): age, genetic variations, functional types, time of year, atmospheric composition competing plants, disease and pest opportunities, moisture content, nutrient availability, temperature, and sunlight availability. The continued increase of CO₂ will represent a powerful forcing agent for a wide variety of changes critical to the success of many plants, affecting natural ecosystems and with large implications for global food production. The global increase of CO₂ is thus a grand biological experiment, with countless complications that make the net effect of this increase very difficult to predict with any appreciable level of detail.

Michelle Bachmann suggests that 'life on planet Earth can't even exist without carbon dioxide', which isn't entirely true. Human and animal life on Earth could exist without CO₂ for a limited period of time, but plant life would not. Human life would sustain for a limited time period – probably a couple of hundred years – until which time O₂ levels in the atmosphere reduce below 17%, the minimum level of oxygen required by humans, and when food resources run dry since vegetation cannot survive without CO₂. There are, of course, some organisms which can survive without both CO₂ and O₂. The recently discovered loriciferans which inhabit the bottom of the Mediterranean Sea where there is neither CO₂ nor O₂ (Danovaro et al, 2010). However, this has been debated by Bernhard et al (2015) who found that these organisms live above the anoxic zone and that those found within the anoxic zone were actually cadavers that had sunk to the base of the seafloor. Danovaro et al (2016) rebutted this argument saying that Bernhard and her colleagues could not claim that these organisms were not living in oxygen and that they could not reach the anoxic zone due to their equipment. Bacteria and algae are also widely known to be able to survive in CO₂ and O₂-free environments; hence life can exist in the absence of CO₂.

Bachmann goes on to account '*So necessary is it to human life, to animal life, to plant life...*' This statement is essentially correct, but it does not quantify how much CO₂ is necessary for life, nor does it address how dangerous excessive levels of CO₂ may be to life and the lifecycle. The Intergovernmental Panel on Climate Change (IPCC) report says that the 'atmospheric concentrations of carbon dioxide, methane, and nitrous oxide have increased to levels unprecedented in at least the last 800,000 years. Carbon dioxide concentrations have increased by 40% since pre-industrial times, primarily from fossil fuel emissions and secondarily from net land use change emissions. The ocean has absorbed about 30% of the emitted anthropogenic carbon dioxide causing ocean acidification' (IPCC, 2013). There is also no mention of how these carbon dioxide emissions will have a detrimental effect on the environment by eustasy caused mainly by glacier mass loss and ocean thermal expansion from warming temperatures. This sea level rise will cause the ever-tightening land usage space to contract which will mean more competition for land availability for agriculture, human occupation, and biofuel production – not to mention industry land usage. The estimates for global sea level rise, according to the IPCC (2013) report, is that by

the year 2100 there will have been an increase of between 0.52 and 0.98 metres. Not only will sea levels have risen, but the ocean will have also warmed significantly, which will lead to increased ocean acidification. The estimates for the warmer ocean are estimated to increase by between 0.6°C and 2°C in the top 100m, and about 0.3°C to 0.6°C at a depth of about 1000m by the end of the 21st century (IPCC 2013). This warming is significantly linked to the ~45% increase in atmospheric CO₂ from 277 parts/million (ppm) at the start of the industrial era in 1750 to ~402.8ppm in 2016 (Dlugokencky and Tans 2016).

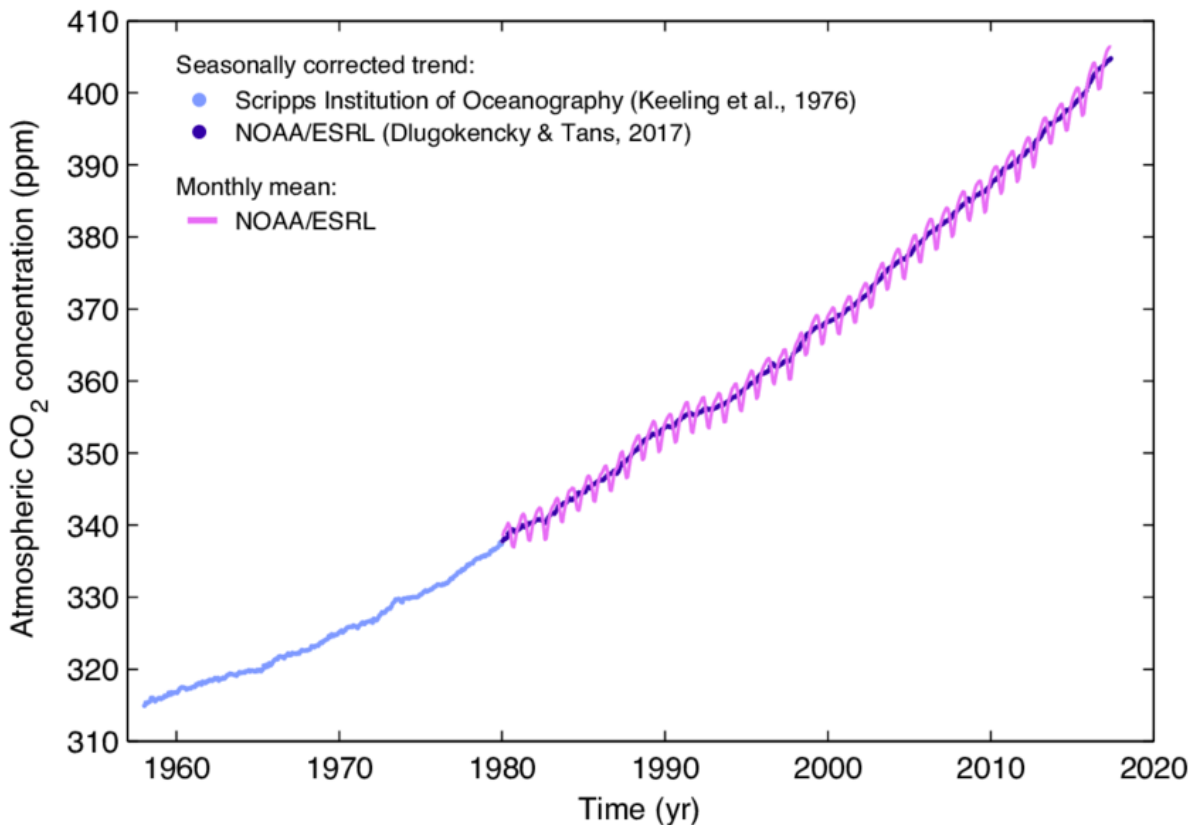


Figure 3: Atmospheric CO₂ trends from the industrial revolution to present

The consensus of the scientific community is that this CO₂ concentration in the atmosphere is, in fact, a serious problem and Bachmann fails to address this. Further, in her speech she says that carbon dioxide is 3% of the atmosphere, which is fundamentally incorrect. CO₂ makes up 0.4% of the atmosphere, but the fact that Bachmann says that it is negligible, because it is only a small fraction of the atmosphere anyway, has little substance. When discussing global warming we consider only the greenhouse gases, of which carbon dioxide is a main contributor.

To conclude, Michelle Bachmann was either misinformed, or she made up the backbone of her statement. The fundamentals of her argument are proven wrong when cross-examined against scientific literature. Her points require more in-depth analysis than what she presents, for sometimes the simplest answers are not the correct ones. It just goes to show how a common belief across an entire party can be misconstrued by its members to portray an uneducated persona.

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