CONTENTS

Editorial Introduction: Decolonising Statistics

As we put the final touches to this special issue we just learned of the re-election of Donald Trump as President of the USA. His campaign was to a significant degree fueled by xenophobic and racist hate, with promises of launching 'the largest deportation program in American history' while some of his allies poured vitriol over the inhabitants of Puerto Rico, a US colonial possession. For the Democrats' part, had Kamala Harris been elected we may have heard a softer tone, but she had also backed the increasing securitisation of the US' southern border. Moreover, the Democrats active financing and backing of the ongoing genocide in Gaza also cost Harris support.

To say nothing of the UK's own 'racist riots' in July and August of this year, whipped up by far-right agitators, but enabled by the mainstreaming of vitriol directed at migrants, many of them fleeing neo-colonial conflicts in which Britain is an active participant.

Race, racialisation and racism clearly matter and the 'problem of the colour line' is as significant to the 21st century as W E B Dubois presciently predicted it would for the 20th. As academics and activists, it is incumbent upon us to challenge contemporary racism, and an important component of this is excavating and expunging racism within our own discipline. Given the legacy of statistics and statisticians in transforming race from a social construction to a pseudo-scientific fact, one could argue we have a particular obligation to the work of decolonising.

But this is not simply a question of historical curiosity, there are contemporary forms of data colonialism that to this day play a pernicious role in maintaining social hierarchies in and between the Global South and the coloniser's heartlands. We hope that this special issue, based on a panel from the 2024 *Radstats* conference, is the beginning of a much larger conversation.

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Steffi Doebler, Lancaster University

Decolonising the social statistics curriculum – why it is important

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Abstract

Decolonizing the curriculum has gained momentum in UK academia in recent years, especially in the social sciences. However, quantitative sections within social science departments have been slow to engage, despite obvious historical links between statistics, Eugenics, racism and the Western colonization of data in the Global South. There is an emerging literature, and notable decolonizing efforts have been made by Radstats members in recent years. I argue that University statistics and methods teaching cannot ignore this dark history and must query links between this history and decolonizing, and how engaging with it can enrich our collective learning.

Introduction

Decolonising the curriculum began as a student-led movement; it is most often dated back to the 2015 "Rhodes must fall" protests at the University of Cape Town (Sunnemark and Thörn, 2023), where students campaigned for the removal of the statue of the coloniser Cecil Rhodes from their campus. The movement quickly spread across the world, and it continues to grow on British university campuses. Decolonising has roots in the wider Black Lives Matter movement which started over a decade ago in the US in response to the killings of Trayvon Martin, Eric Garner, Rekia Boyd, George Floyd and others. The removal of colonisers and slave traders from their pedestals symbolises a long overdue reckoning with Western histories of colonialism, racism and white supremacy.

At Universities around the world students have been asking 'why is my curriculum white' and why are there are so few female professors

of colour. The decolonising movement has strong representation in the humanities and social sciences but is still lacking representation in STEM subjects, mathematics and statistics.

My engagement with decolonizing began during the 2020 Black Lives Matter rallies in Lancaster. I had just started my new job there as lecturer in Sociology and Social Statistics. Like many cities, Lancaster had joined the global wave of marches responding to the murder of George Floyd by a police officer on 25 May 2020 in Minneapolis. People took the knee every week in solidarity with Black Lives Matter and with the victims of racist violence. One day, demonstrators were forming a human chain that stretched the c. 1 km from Dalton Square in the town centre to St George's Quay on the bank of the river Lune. I joined the chain on Damside street, just opposite a monument named "Captured Africans"; Created in 2005 by Kevin Dalton-Johnson, the monument commemorates Lancaster's historical ties with the trans-Atlantic slave trade. During the Empire, Lancaster was the UK's fourth largest slave port and had profited handsomely from its benefactors' trade in slaves, sugar and mahogany, - a legacy that is still visible in the town's beautiful Georgian town houses and its old warehouses which line St George's Quay. The person next to me in the human chain was a historian and we chatted about Lancaster's colonial history. I was fascinated by the decolonising work my colleague was involved in. A University initiative by staff and students offers regular historical walks in the town that inform participants about Lancaster's links with the slave trade, there are hundreds of decolonising events each month on campus, including reading groups, walks and discussion events. The encounter inspired me to reflect on my own teaching of quantitative methods, which I found was too a-historical, and I wondered why decolonising was still largely absent from the quantitative methods curriculum, while being well represented in the interpretivist sociology camp.

One possible explanation may lie in misunderstandings among quantitative methodologists of what decolonising means and what it aims to achieve. Shortly after my first encounter with decolonising, I sent a request to the mailing-list of one of the largest quantitative sociology groups in the UK asking if there was interest in a

decolonising quantitative methods working group. I received one reply by a senior academic who objected to the idea of decolonising because in their view, statistics was not "colonised" and therefore did not need to be "de-colonised". Their second argument was that statistics uses objective mathematical concepts and that therefore the discipline was immune to colonisation. Their former argument ignores the fact that rather than *being colonised,* the discipline has a well-known history of *being colonisers,* in having been complicit Britain's global colonialism of the early 20th century, and having, through the Eugenics movement of its founders, actively supplied racist, antisemitic and ableist pseudo-justifications for colonialism. Their latter argument reveals a naïve positivist belief in the objectivity of our theories and knowledge, which I doubt many quantitative methodologists today would share. Sociological approaches such as feminism, interpretivism and critical realism have long moved beyond positivist objectivity assumptions and accept that knowledge systems are never values-free.

There is no agreed authoritative definition of what decolonising is. To address some anxieties of sceptics, it might help to offer some thoughts on what decolonising is not: Decolonising is not censorship, it is not an agenda to remove literature, or to remove the teaching of statistical concepts. Decolonizing is also not an attempt to curtail academic freedom, or to tell colleagues what to teach. Decolonising does not try to impose a standardised canon. Decolonising, in my understanding, is about representation, antiracism and about developing a critical understanding of the harms of our societies' colonial legacies and of how colonialism has influenced academic disciplines and practices down to the statistical concepts we learn and teach every day. Decolonising is about asking critical questions. It has this in common with critical race studies, and QuantCrit, a flavour of critical realism that emphasises antiracism (Demack 2023). Decolonising goes further than critique, its aim is also to increase representation of minoritized ethnicities in academia and to unmake racist and colonialist practices and structures. Decolonising as an intellectual endeavour is not reductive but expansive.

Knowledge systems, oppression and power

Academic knowledge generation does not happen in isolation, it is never objective, value-free or neutral. This fact has been widely accepted in the quantitative social science community since the emergence of critical realism (Danermark, Ekström and Karlsson, 2019). Universities also do not exist in a vacuum; they are embedded in social, political and economic contexts. They reproduce and maintain power. What knowledge is generated, valued and listened to depends on the political and cultural elite and on markets.

For most of Europe's history, universities have been elite institutions, built by and for society's 1%. In Britain, much of this wealth and power historically derives from colonialism. Many of the wealthy early benefactors and donors of the UK's most elite institutions were colonisers, or their descendants. This legacy is still reflected in many institutions' assets (Pimblott and Booth, 2021; Advisory Group on Legacies of Enslavement, 2022; Gamsu, Ashe and Arday, 2024).

Modern universities have, nevertheless made considerable progress on their paths to inclusivity. Contemporary widening participation efforts have achieved that 38% of 18-year-olds in the UK took up a place at university in 2022 (GOV.UK, 2022, p. 18), 29.2% of pupils who were eligible for free school meals[1], and that the percentage among Black pupils who attend university has increased by 19% since 2009 (Office for National Statistics, 2022, Branchu and Boliver 2022).

While the above numbers are often used to argue that today's universities are no longer the extremely exclusive bastions for the white British upper class they used to be in past centuries, contemporary research has shown that working class students, those from economically deprived areas and those from minoritised ethnicities still face considerable disadvantage (Yu, Gamsu and Forsberg, 2024). The sizeable attainment gap between Black and other minoritised ethnicities and their white British counterparts in their degree outcomes has been widely reported (Demack, 2023; Richardson, 2018; Richardson, Mittelmeier and Rienties, 2020).

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[1] Eligibility for free school meals is interpreted here as an indicator of economic deprivation, not class.

Experiences of bullying and discrimination disproportionately affect Black students and those from other minoritised ethnicities, and the curricula taught in lecture theatres and seminar rooms at British universities are still predominantly white and male (Arday, Branchu and Boliver 2022), which is not conductive to equality, diversity and inclusion (EDI).

Paradoxically, universities have a proud tradition of being places of progress and intellectual development. Contrary to what some senior managers seem to believe, universities are not mere degree factories that cater to the demands of capitalist graduate job markets. Universities have historically been places where the status quo is questioned. This is what allows innovation to happen. To avoid reproducing a dusty, oppressive status quo, we need to question hierarchies and power imbalances and our inherited knowledge. This is how we learn. Decolonising is a natural outcome of questioning discriminatory assumptions, power hierarchies and racist biases. If universities are to be progressive, then decolonising is a natural development. The only surprise is that decolonising has not evolved sooner.

Recent years have seen a growing decolonising literature. Colleagues are processing our colonial and colonised histories, have critically analysed curricula in schools (Jagdev, 2022) and universities, and we now also witness a growing engagement with decolonising in quantitative methods and statistics (e.g. Couldry and Mejias, 2023; Zwiener-Collins *et al.*, 2023; Brookfield and Saini 2024 in this issue).

Eugenics and the dark history of statistics

Many students of statistics are unaware that the discipline's history has a dark side, that it has deep historical entanglements with colonialism, Eugenics, racism and ableism. This topic is not routinely taught on social science methods curricula.

The founding fathers of frequentist statistics were also the original founders of the Eugenics movement (Levy, 2019; Clayton, 2020). Francis Galton, credited for introducing linear regression, also authored in1869 his book "Hereditary Genius" – the leading

introduction of Eugenics, precursor discipline to genetics. Eugenics introduced social-Darwinist assumptions and the belief that traits that were considered undesirable should be removed from the gene pool through breeding, for the betterment of humanity. Eugenics was from its beginning fundamentally racist, white supremacist and ableist. Galton's book has many explicitly racist and antisemitic passages. Its chapter "The Comparative Worth of Different Races" is notorious.

Galton's school at the University College London was *the* hub for leading statisticians of the Victorian era. Galton's proteges Karl Pearson and Ronald Fisher, after whom the correlation coefficient Pearson's R and Fisher's exact test were named, were not just world leading statisticians, they were also leading Eugenicists.

Pearson expressed his racist and antisemitic views repeatedly, most notably in "The problem of alien immigration into Great Britain", published in1925 with his assistant Margaret Moul (Moul and Pearson, 1925). The article stated that other "races", in particular Jews, were inferior to the British "race" in terms of intelligence and physical health and that immigrants should be selected based on whether they were genetically superior to the average majority population.

Figure 1: Francis Galton (right) and Karl Pearson (left) c. 1910

Image credit: National Portrait Gallery (CC BY).

The Eugenics movement spread to the US, where it was picked up by Charles Davenport and Madison Grant, who founded an American Eugenics society. Grant is notorious for his (1916) book "The Passing of the Great Race" – a sort of white supremacist bible. The book was greatly admired by Germany's Nazi leadership in the 1930s. Eugenics has inspired voluntary and forced sterilisation programmes in several countries, targeted at people with disabilities and ethnic minorities. There is a direct link between Eugenics and the Holocaust.

Many of the statistical concepts we teach today, and even the physical tools we use, were used by their developers to pursue inhumane, racist and ableist agendas. A tangible example is the IBM Hollerith punch card machine, a precursor of the modern computer. The Nazis had contracted IBM to deliver thousands of those punch card machines to be used to process the 1938 German minority census, which collected Jews and other minorities' personal data (Aly and Roth, 2004), thus enabling authorities to round up victims at their homes and deport them to death camps. The Hollerith punch card machine was also used to process the data of victims in concentration camps - Black delivers a chillingly detailed account of this history (Black, 2012).

It is very important to teach this legacy on statistics modules because if we want to become better statisticians, sociologists, scientists, intellectuals, it is not enough to just learn statistical concepts in a-historical isolation. We need to know where the thought processes and tools that we use come from. We need to know better so that we can do better.

Much important work has been done by the Decolonising movement at UK universities in uncovering the racist and ableist legacy of our discipline. As a result, University lecture theatres have been renamed and the colonisers pushed from their pedestals. In 2020, UCL issued a public apology (Clayton, 2020). In Universities across the country, colonisers and Eugenicists are removed from their pedestals and decolonising the curriculum is becoming institutionalised.

Data Colonialism

A *de-colonial* discussion of colonial histories of Western statistical and data governance in the Global South is long overdue. E.g. it is common knowledge that the first statistics agency in India was established in the 19th century by British colonial rule for the purpose of gathering economic intelligence for the colonisers (see Kalpagam, 2000). However, this is rarely problematised in British and European statistics and data science classrooms.

More recently, concerns have also been expressed among data scientists about the contemporary colonising of (often personal and sensitive) data from survey participants in the Global South by agencies in the wealthy North (Couldry and Mejias, 2019, 2023; Oosthuizen, 2023). A decolonising perspective highlights important questions regarding the ethics of informed consent where survey data is taken, who the data is taken from, who can access it and who controls the processes of data collection, curation and processing. Concerns have also been articulated over how to ensure ethical data use and processing when administrative data that was not collected for research purposes is linked to other data sources and processed. These are familiar general ethics concerns, but they become more urgent when data is taken from indigenous populations and exported from communities and onto servers outside the country, and where there are power disparities between those the data is taken from and the researchers and agencies that use the data. An evolving literature considers cases where data from the Global South has been taken and exported and then disappears on servers and behind paywalls in Western countries or Asian data hubs (Anonymous, 2016; Couldry and Mejias, 2019). Questions around who controls the data, who has ownership and who profits from it, whether it is at all ethical for data to be commodified, sold and bought, are becoming increasingly urgent in a highly globalised knowledge economy.

Important concerns have also been raised, in the Radstats community and beyond, about biases and discrimination in commonly used operationalisations of ethnicity/ ethnic groups, especially the collapsing of ethnic categories such as white vs non-white, which often obscure white advantage (Demack, 2023). Demack

has pointed out that thoughtless, uncritical use of statistics is a contributor to racial bias and ethnic inequalities. Hence, a critical, reflexive and respectful use of our data and measures that report on ethnicity must be a crucial part of any decolonising efforts.

Discussion - why should we decolonise statistics teaching?

We cannot learn and use the concepts and techniques of our disciplines meaningfully and responsibly without knowing their histories and the contexts under which they evolved. As data users, statisticians and quantitative methods teachers, we have a responsibility to engage with and discuss the ethical problems of our research, starting with its colonial, racist and ableist legacy.

Best ethical practice in our teaching must include a critical reckoning with where the methods and data that we use come from and we have to be critically aware of persistent colonial thinking patterns and legacies. A decolonising approach is the best suited to ensure best teaching practice because it is critical, collective and non-hierarchical, it offers opportunities for students to take leadership and for us all to take collective ownership of our teaching and learning.

A decolonising approach is also the best avenue to overcome crusted knowledge hierarchies, i.e. what knowledge is deemed worthy of being represented, who gets to speak and who is read, cited and listened to.

There is ongoing debate about whether the removal of the names of colonisers and Eugenicists from buildings and lecture theatres is the best way to decolonise academia. Many of those who argue that colonisers' names should remain in place have not, however, themselves been affected by colonialism, racism and ableism.

Some anxiety has also been expressed by colleagues in the public sphere that decolonising efforts may lead to an elimination of useful concepts, which were discovered by the classic founders of our disciplines, from curricula and reading lists. However, the opposite

is true. Decolonising is not an exercise in censorship. Decolonising, as I understand it, is a form of critical thinking and one way to achieve inclusive and ethical best practice. It is a way forward in acknowledging our statistical heritage critically and it allows students to reflect on where the theories and tools we use come from and what inclusive and decolonial practice could look like.

Where to start?

Any new approach comes with challenges. At a practical level, questions arise on how to integrate decolonising efforts into our teaching practice. Social statistics modules are busy teaching statistical concepts and techniques which sociology students find notoriously challenging. Finding the space and time on modules to allow for decolonising discussions is a challenge.

On a 2nd year UG module in beginners' level applied statistics which ran for the first time last year, I included new content on the history of Eugenics, and data colonialism and dedicated some space to the works of W.E.B. Du Bois, Harvard's first Black professor and Florence Nightingale, one of the few female statisticians of the early 20th century. But including this new content meant that the class did not progress as far as I would have liked in the application of statistical methods. Nevertheless, the open and insightful discussions module participants had on decolonising were promising.

Decolonising is also a learning curve. There are new literature and concepts to discover and consider, especially scholarship from the Global South that I have been unaware of. But good scholarship is expansive, and a continuation of new discoveries can only be a good sign.

It is also important to keep in mind that decolonising is not an isolated but a collective effort. There are whole curricula to consider, every degree programme is different and different student cohorts may have varying learning needs.

It is a good start to seek out fellow decolonisers. Check whether your local University already has a staff-student decolonising initiative. If

it does, then there is a good chance to find existing reading groups, seminars, perhaps a mailing-list and a community of like-minded people who can learn from each other. I am happy to have found such a community at my institution and at Radstats.

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Decolonising the Quantitative Research Methods Curriculum

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Abstract:

The status of quantitative research methods in the UK social science curriculum has long been under scrutiny, prompting initiatives to increase engagement with quantitative methods learning. This paper argues that decolonising the quantitative methods curriculum can enhance its accessibility, relevance, and interest to students. Decolonising involves challenging colonial legacies and biases embedded in educational structures. The quantitative research methods curriculum serves as a crucial space for these efforts, offering an avenue to confront underlying assumptions and biases in research practices. In this paper we share practical strategies for decolonising the quantitative research methods curriculum, including tracing the historical origins of statistical techniques, questioning classification systems, promoting data literacy, and encouraging reflexivity among students. However, decolonising presents challenges, necessitating humility and allyship. We aim to demonstrate that the quantitative research methods curriculum can become more inclusive, equitable, and empowering for all students.

Key words: Decolonise, Quantitative, Curriculum, Research Methods, Sociology, Social Science

1. Introduction:

The status of quantitative research methods in the social sciences and specifically, sociology in the UK has long been a topic of longstanding scrutiny (Bechhofer, 1981; 1996; Bulmer, 1989, Payne

et al., 2004). Various initiatives have been launched with the intent of integrating more quantitative research methods learning into the curriculum, yielding mixed results (MacInnes, 2009; Bullock et al., 2014). Notably, the Q-Step programme, initiated in 2012, stands as one of the largest and most recent endeavours of this kind (Grundy, 2020). Supported by the Nuffield Foundation, British Academy, and Economic Social Research Council, this programme engaged a network of higher education institutions across the UK. The funding provided enabled the universities to develop new modules and degree programmes focused on enhancing statistical literacy, data management, and analysis skills. The overarching ambition was to catalyse a significant shift in attitudes toward quantitative research methods in UK social sciences and to equip more students with the expertise to address job market demands.

In our paper, we posit that while strides have been made in advancing the teaching of quantitative research methods in UK social sciences, efforts to decolonise the quantitative research methods curriculum could further enhance its accessibility, relevance and interest for social science students. We begin this paper by outlining what we mean by decolonising the curriculum, we then discuss why we believe that the quantitative research methods classroom is a good place for educators to begin to decolonise the curriculum for social science students. We share examples of changes we have incorporated in our own teaching as well as a cautionary note on the challenges of implementing these changes.

2.   Decolonising the Curriculum:

Broadly speaking, decolonising the curriculum involves challenging and dismantling colonial legacies, biases, and structures in the educational framework (Begum and Saini, 2019). Student activism has played a central role in fuelling calls for decolonising the curriculum. This activism has manifested through movements such as "Rhodes Must Fall" and campaigns like "Why is My Curriculum White?" which have highlighted the need to confront and address the

lasting impact of colonialism on education. Consequently, there have been calls for the removal of colonial symbols and figures from academic spaces and a commitment to challenge the Eurocentric bias and lack of diversity in academic curricula (Peters, 2015; Meda, 2020).

For Kimunguyi (2020), a colonial curriculum is one which is biased, exclusive, and privileged in nature. It is biased because it selectively presents teachings that often omit viewpoints and narratives of the colonised. It is exclusive because it alienates many recipients who cannot relate to the narratives presented, while catering to a historically favoured demographic. It is privileged because it maintains the participation, comfort, and success of this select group. The profound influence wielded by the curriculum and pedagogic practices in perpetuating specific historical narratives whilst marginalising certain groups cannot be overstated. Hence, a decolonised approach to the curriculum becomes imperative to create space for marginalised voices and to rectify historical inaccuracies and injustices.

However, decolonising the curriculum is a "thorny issue....[which] does not have a single approach or single answer" (Meda, 2020; p. 89). As such, decolonisation of the curriculum should not be seen as merely a checkbox activity or a superficial diversification of reading lists. It is not something that can be haphazardly implemented without careful consideration or ongoing reflection and importantly, it is not solely the responsibility of colleagues from minority backgrounds. Instead, it is a collective challenge that demands the participation of everyone. Decolonising the curriculum requires sustained dialogue—sometimes uncomfortable dialogue—and a critical examination of existing structures. It necessitates a commitment to fostering an environment where discomfort is acknowledged as part of the process of growth and transformation.

Overall, the aim of decolonising the curriculum is to create an educational environment that is more inclusive, equitable, and empowering for all students, while also challenging the dominance of

Western perspectives in academia as part of the ongoing influence of colonialism, and contributing to broader social transformation.

3. Why Decolonise the Quantitative Research Methods Curriculum:

Quantitative research methods are a compulsory part of most social science undergraduate degree programmes in the UK and should not be exempt from the decolonisation initiatives (QAA, 2019). We contend that the social science research methods classroom represents a crucial starting point for such efforts. This is because research methods, particularly quantitative ones, often establish an artificial distance and implicit hierarchy between the researcher and the researched 'subject' often imposing predetermined values (Smith, 2012). Furthermore, some may perceive quantitative approaches as possessing greater authority (Castillo and Gillborn, 2023). Decolonising methodologies, provides students with a more critical and nuanced understanding of the philosophical assumptions, motivations and values underpinning the various different approaches to research (Smith, 2012).

Students are often unclear about the pertinence of their research methods training for their substantive area of study (Acton and McCreight, 2014). However, by introducing opportunities to consider critically the traditions, values and assumptions of different approaches to studying the social world, quantitative research methods learning can become more relevant and engaging. In the subsequent discussion, we describe how we have endeavoured to cultivate this critical perspective among our students within the quantitative research methods classrooms. Drawing from our experiences teaching undergraduate and postgraduate students across various academic disciplines, including sociology, education, criminology, and politics, we aim to illuminate some approaches for decolonising the quantitative research methods curriculum.

4. Ideas and Practices for Decolonising the Quantitative Research Methods Curriculum:

4.1 Tracing the History of Quantitative Research Methods

A starting point for decolonising the quantitative research methods curriculum involves explicitly examining the historical origins of various statistical techniques commonly used in the social sciences, which are often taught in our classrooms. For example, consider Francis Galton, a pivotal figure in the development of sociology as an academic discipline in the UK and the cousin of Charles Darwin (Renwick, 2011). Galton sought to advance his eugenics project through sociology. Specifically, in relation to quantitative research methods, Galton utilised the bell curve as a tool for highlighting social heterogeneity and identifying what he deemed 'abnormal' traits, aligning with his eugenics objectives (Doebler, 2024; Eknoyan, 2007). Unfortunately, the "historical provenance, staying power and flexibility" (Stern, 2016; pp.17) of Galton's work has meant that narrow definitions of ability have lived on. Stern (2016) and Kunkel (2021) highlight the ubiquitous nature of Galton's ideas in recent thinking, including Richard Herrnstein and Charles Murray's (1994) *The Bell Curve.*

Similar critiques extend to figures like Pearson and Spearman, who popularised statistical approaches to delineate racial hierarchies in human intelligence (Doebler, 2024; Williams, 2016; Zuberi, 2001; Zwiener-Collins et al., 2023). However, these stories of the founders of statistical techniques frequently employed in the quantitative research methods classroom are seldom shared and such "content is virtually non-existent in methodological textbooks" (Arellano, 2022; pp.2).

Tom Fearn (2020) provides an accessible overview which can be signposted to students of Galton and Pearson's work and the negative impacts that their use of statistical concepts had on society. By unravelling the origins of these statistical tests, we expose to our students, how these tests were conceived within distinct cultural,

social, and political milieus, reflecting the biases and power dynamics inherent at the time. Although, it is essential here to recognise that while statistical techniques are products of their social and historical contexts, they are fundamentally based on mathematical principles. As Williams (2016, p.214) cautions when describing the work of Pearson, statistical tests "are not tainted by the context of their invention." The key issue, then, is not the methods themselves but how they have been historically applied to provide racist, ableist justifications for colonialism (Doebler, 2024).

These historical accounts shine a light on the dubious ways statistical approaches were historically used. In turn, fostering a culture of critical inquiry and reflection, empowering students to scrutinise the potential biases in existing research, as well as those biases which they may inadvertently bring into their own research — thus destabilising entrenched modes of thinking.

4.2 Questioning Classifications

Another way to promote a decolonised approach to teaching quantitative research methods is by drawing on the work of critical realists and creating spaces for free thinking and critical discussion. While critical realists have historically shown an "indifference towards probability and quantitative methods" (Williams, 2021, p. 8), we argue that their emphasis on subjective experiences aligns with decolonising efforts in the quantitative curriculum. Specifically, encouraging discussions about how surveys and quantitative data classify or categorise individuals can help illuminate the ways in which students' personal contexts influence their learning and methodological choices.

It is crucial to acknowledge that the datasets commonly utilised in teaching quantitative research methods are predominantly developed and collected by researchers from the Global North (Zweiner-Collins et al., 2023). Focussing specifically on crime related data, Buil-Gill et al. (2024) provide a comprehensive list of data recorded in the Global South that can be incorporated into quantitative research methods teaching. Even when analysing survey data from other regions, it

often originates from large global surveys designed, developed and even distributed, by researchers in the Global North (a notable exception is the Afrobarometer) (Buil-Gil et al., 2024; Zweiner-Collins et al., 2023). Researchers from the Global North inevitably bring their own life experiences and assumptions to the table, shaping the formulation of questions and the available response options for participants.

It is important to highlight to students that the categories used in social research are arbitrary constructs that are deeply entrenched in historical practices and biases (Castillo and Gillborn, 2023). Indeed, discussing national census surveys, Winlow (2020, p.317) describes how the "Categories...reflect governmental concerns of population control, as well as the immigration history of the country concerned". For example, in the UK, the 1966 census used classifications including 'old commonwealth' and 'new commonwealth' to estimate the size of the Non-White population (Laux, 2019). Later, Ahmad (1999) discussed the approach to asking about ethnicity in the 1991 census. They highlighted the difficulties of operationalising a "fuzzy, flexible and contingent concept" (p.125) into a list of response options deemed "conceptually haphazard" (p.127) and ultimately constraining for those respondents who do not identify as 'White'. Moreover, it was only in the 2021 UK census that certain ethnic groups, such as Roma, were included for the first time. This historical context underscores the importance of critical engagement with the categories employed in research, as they significantly shape the understanding and interpretation of social data. We encourage students to explore the Story of the Census (ONS, 2022) which describes how the UK census came to be in the 1800s and how it has developed, including changes to questions and concerns about response options available.

Similarly, research findings often aggregate small ethnic groups and compare them to a larger, typically White male, group (Arellano, 2022)- possibly, because these categories have been created by White males (Walter and Andersen, 2013). The act of comparing 'others' with the most privileged can be seen as an act of oppression and leads to the homogenisation of participant groups meaning that

significant cultural and contextual nuances can be overlooked (Arellano, 2022, Zweiner-Collins et al., 2023).

By engaging in critical discussions around these issues, students can develop a more nuanced understanding of the potential biases inherent in quantitative research methodologies and cultivate a more culturally sensitive approach to data analysis and interpretation. We encourage readers to look at alternative datasets that they can incorporate into their teaching including Afrobarometer, Annual Status of Education Report (ASER), or the Demographic and Health Surveys (DHS).

4.3 Thinking Reflexively

Historically, objectivity in quantitative research has been synonymous with the notion of 'good' and as such, reflexivity has often taken a backseat in quantitative research (Ryan and Golden, 2006). However, effective decolonisation of the quantitative research methods curriculum requires actively encouraging students to embrace reflexivity and to acknowledge that quantitative research methods require subjective decision-making and are just as socially constructed as other research methods (Gillborn et al., 2023; Ismail, 2024; Williams, 2015). Ismail (2024) describes statistical output as being contingent on several factors including the researchers' social and cultural background and advocates for researchers to critically unpick the viewpoints and influences that led to various decisions in relation to variable selection, data collection approach and so on throughout the research process.

Recognising the non-linear nature of research when measuring and recoding demographic characteristics or social phenomena is crucial. Students must understand how the decisions they make during the research process can influence or constrain conclusions drawn from their statistical models. Encouraging students to reflect on how their own positionality and experiences shape variable choices and data interpretations is equally significant in quantitative research as it is in qualitative research.

Castillo and Gillborn (2023) and Ismail (2024) advocate for the inclusion of a positionality statement in research outputs. They contend that the lack of such statements in much quantitative research creates the erroneous perception that the study was conducted in isolation from social influences and the researcher's personal experiences. They propose that researchers, including student researchers, should explicitly acknowledge how their personal backgrounds have influenced the research process.

By fostering reflexivity, students gain a deeper understanding of the subjective elements inherent in research methodologies, contributing to a more critical and nuanced approach to knowledge production. This cultivates an environment where diverse perspectives are valued, challenging dominant narratives and advancing toward a decolonised curriculum.

5.   Challenges and Discomfort:

Decolonising the quantitative research methods curriculum which destabilises and decentres exiting hierarchies takes time. It also requires a collaborative effort and willingness to engage in potentially uncomfortable conversations. It is important that these efforts are not disproportionately left to those who have themselves been marginalised from the curriculum or higher education in the past (Meda, 2020). As social scientists, this challenge is one that we should embrace wholeheartedly. Indeed, questioning and challenging assumptions that have gone unexamined is fundamental to the role of a social scientist.

Furthermore, it is important to clarify that the above points are not meant to diminish the significance of teaching quantitative research methods or to underestimate their role in illuminating structural barriers, inequalities and promoting greater equity. Indeed, both of us have collaborated with colleagues over several years to advocate for greater inclusion of quantitative research methods in the social

science curriculum. Walter and Andersen (2013, p.7) assert that "Statistics are powerful persuaders" and acknowledge the importance of numbers in policy and practice, in turn, they argue that abandoning quantitative approaches altogether will not benefit marginalised groups. They caution readers against falling into the trap of seeing qualitative methods as less culpable and abandoning quantitative approaches altogether. Instead, they advocate for statistical literacy for all, enabling diverse voices to be included in the creation of quantitative data collection tools, the analysis of statistics, and the presentation of results to policymakers and other key stakeholders. Promoting such literacy ensures that the tools of quantitative research can be wielded to highlight and address inequities more effectively.

We are also cognisant of the fact that in many social science departments, quantitative research methods training may fall solely on the shoulders of one or two faculty members (MacInnes, 2009). We do not want to underestimate the challenges that these colleagues may already face in championing the quantitative research methods curriculum singlehandedly and thus, appreciate that the prospect of decolonising the curriculum may seem daunting. However, the intention of this paper is to prompt readers to engage in critical reflection on research methods, particularly regarding the Eurocentric nature of research methods, and to consider how this can be integrated into their current teaching practices. Teaching plays a pivotal role in ensuring that these practices are widely questioned, as the skills and values imparted to students resonate in their future endeavours, both within and beyond academia (Arellano, 2022).

Whilst Q-Step funding in the UK has now finished, we believe that the decolonising agenda, underscores the necessity for quantitative practitioners across the country (and further afield) to remain engaged in discussion and share ideas about how to ensure the quantitative social science curriculum remains relevant and accessible to students.

6. Conclusion:

This paper has advocated for decolonising the quantitative research methods curriculum in social science disciplines. While progress has been made in integrating quantitative research into social science education, efforts to decolonise the curriculum can further enhance its accessibility and relevance for students. Quantitative research methods are often caricatured as being objective and value-free and contrasted to qualitative methods of data collection. However, in this paper we have demonstrated that by decolonising quantitative research methods encourages students to think critically about these approaches to collecting data on social phenomenon.

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'Reflexive Quantitative Methodologies' (RQM): Providing a voice for marginalised groups

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This paper explores the view that all quantitative research should incorporate a reflexive component, by considering Reflexive Quantitative Methodology (RQM) as an approach. Not only can it do more, but it also pushes the limits of what quantitative research is capable of. This methodology enables quantitative research to provide a voice to marginalised groups, including racialised minorities, particularly considering the growing trend to 'decolonise' higher education. Within the research design, RQM offers a dedicated area for positionality and self-reflection. People, for example, reflect constantly in their daily lives. But when researchers deliberately engage in this technique, they can potentially achieve powerful results, including structural and cultural generational shifts, and have a significant impact on society as a whole.

Where we are now: Reviewing the advantages and limitations of quantitative methodology

We know and can attest to the many advantages and benefits of quantitative methodologies. They are extremely useful in providing a quick insightful snapshot of the research area, they are very efficient and provide statistical evidence, especially for impact research. They can be generalisable to the wider population and can demonstrate rigour in the research process, and essentially answer important

questions about society (Godwin et al, 2021). Ultimately, most quantitative researchers know how powerful this approach can be in providing evidence for policy and practice and bringing to light many issues in society. This is beneficial in all fields but especially for those in the Social Sciences. For instance, the author was investigating the inequalities in higher education faced by racially diverse students, specifically focussing on the differential awarding gap, the effects of socio-economic factors, as well as other structural factors for students from racially minoritized backgrounds. The current author initially developed the RQM model (Reflexive Quantitative Methodologies) to investigate and gain better depth of understanding of the awarding gap and why it disproportionately affects students from marginalised backgrounds more than their white, middle-class counterparts. It is currently under development and being theorised. It took inspiration from qualitative research, reflexivity, critical realism and quantcrit (Gillborn, Warmington and Demack, 2018), where acknowledging the researcher's own role within the research is important to consider and where the researcher is a part of the process.

Whilst acknowledging the many benefits of using quantitative methodology, the suggestion is to use reflexive quantitative methodologies instead, to consciously improve the current widely used quantitative methods. Despite the numbers and the statistics being central to these methodologies, it is crucial to note that they lack a human element, that the way we measure in research and the numbers they produce are not neutral. Often, objectivity is cited as being one of the central aims of scientific research, and that quantitative data enables more scientific research, but many social scientists have contested this view, that complete objectivity is not necessarily possible or desirable, as the numbers/statistics are real people with individual narratives (Bhaskar, 1989). This remains true even when using the frequentist approach, which is the most widely used approach in traditional quantitative social sciences (Pek & Zandt, 2020). It can be identified with the use of the Fisher, and the Neyman-Pearson approach to evaluating hypotheses, which improved on the Fisher null hypothesis by introducing an alternative hypothesis (Neyman-Pearson, 1928). This approach aims to establish

the truth in a particular experience and examines the probabilities of the observed data (Birkett, 2020). Whilst hypothesis testing allows the researcher to support or refute a theory and enables the research findings to be generalisable to the wider population, there is the issue of over focusing on p-values, hypothesis testing and its implied objectiveness.

Overfocusing on hypothesis testing can be problematic because significance frequently exceeds effect size, and sample size can have a large impact on p values, which are easily manipulated, (Matthews, 2021; Wasserstein and Lazar, 2016). This is especially true in the social sciences, where data analysis is frequently undertaken with an overemphasis on hypotheses and numerical summaries. John Tukey (1980), who created the concept of Exploratory Data Analysis (EDA), suggested that there is often an overemphasis on confirmatory research and insufficient focus on using the data itself to generate theories. When focusing solely on hypothesis testing and p-values, it is possible to overlook important information. Furthermore, it raises the issue of p-hacking, which is the manipulation of data analysis until statistically significant results are obtained (along with other variations of data manipulation such as cherry-picking - Andrade, 2021), calling into question the objectivity of quantitative data analysis.

Thus, despite the fact that many quantitative researchers still aim to be objective, there are still fundamental truths that are based on an individual's experience and perception of reality (Holmes, 2020), and we must consequently acknowledge that our understanding of the universe is constantly contingent upon who we are, what we are doing to get that understanding, and the environment, society, individual, or culture—a concept known as epistemic relativism (Seidal, 2021). Additionally, this comprehension of individual ontology is a crucial component of research as it informs every aspect of the research design process, conducting the research and then the interpretation and dissemination of the results. Therefore, this paper explores the approach of Reflexive Quantitative Methodologies (RQM).

What is RQM? (Reflexive Quantitative Methodologies): An overview

Reflexive Quantitative Methodologies, RQM as a model, was developed experimentally through the author's doctoral research; through exploring their own positionality, reflexivity and how it became clear that despite trying to be objective, this is impossible for two reasons. First, we as the researchers, are more complex than what traditional quantitative methodologies allow us to acknowledge. And secondly, the people we study are complex too. Traditionally, the epistemological foundation of quantitative methodology has been based on (post)positivism that the researcher is separate from the research, they are on the outside of what they are investigating and cannot influence the results (Godwin et al, 2021). However, critical realists would argue that they do not adopt this position; similarly, RQM suggests that it is beneficial to recognise and acknowledge the researcher as part of the process. So, to assume that the researcher is void of all subjectivity, or to neglect the power dynamics involved in the research sample and the wider population would be remiss. For instance, traditional quantitative methodologies aim to be completely objective, however as this is not fully possible, the suggestion instead is that we acknowledge our individual perspectives that life experiences create, celebrate them, and use them to really understand our research and research population.

This concept is reiterated by Jamieson, Govaart and Pownall, (2023, 1) who state that *'reflexivity is the act of examining one's own assumption, belief, and judgement systems, and thinking carefully and critically about how these influence the research process'* and discuss the idea of using reflexivity in research in one of two ways: where subjectivity is acknowledged, centred, or acknowledged, confronted and challenged and/or a combination of both). The RQM model suggests doing both by embedding reflexivity at every stage of the research process. This allows for deeper, richer analysis and empowers the people we are studying by ensuring that the research population is central to the research, from concept, language used, what we choose to explore within the wider research area, how we

measure concepts, how we collect the data, and then analyse it. Research conducted in this way can play a crucial role in rectifying social injustices.

To continue with the example introduced earlier, of investigating the awarding gap using the RQM model; it allowed the researcher to take a step back and really assess the historical context and purpose of higher education, their own positionality within the context of the research, as well as the wider implications in society. Many higher education institutions, including the one used in the author's study, have a large proportion of widening participation students, students from racially minoritized backgrounds, (less so in Russell Group institutions), and an underrepresentation of the diverse student body within the faculty/academics. Therefore, it became crucial to be reflexive, to continue to challenge the status quo, and to create initiatives to empower marginalised students. Traditionally when the awarding gap is explored, it is very one dimensional with comparisons between White and BAME (Black, Asian, and other ethnic minority backgrounds), and whether they obtained a good honours degree (first class degree and second class-upper degree) or not. This is generally the way it is explored by the sector, however, the RQM model approached the issue in a much more nuanced way, understanding and acknowledging that there is much more to a final award obtained than superficial comparisons.

By being reflexive within the research process – considering which variables to select, what influences student decisions, and investigating how much agency and structure have an impact on students' final award - leads to significant change as the purpose of research is not knowledge for the sake of knowledge, but to make a positive impact for those involved. This is in line with Gillborn, Warmington and Demack (2018) and Demack (2023) who state that quantitative methods/analysis should play a critical role in rectifying social injustice, without this, there is no value to statistics on their own. Furthermore, that *voice and insight are vital: data cannot 'speak for itself' and critical analyses should be informed by the experiential knowledge of marginalized groups'* (Demack 2023, 2).

At the time when the RQM model was developed and coined by this author, the researcher was exploring the awarding gap, the experience of 'non-traditional' students (Wong and Chiu, 2021) in higher education and consequently their final award classification. This focussed on students from racially minoritized backgrounds, students from working class backgrounds, and academically first-generation students. The 3 models represented the way people develop their identities, their confidence, their demeanour by internally synthesizing their experiences. Model 1, or the first layer, first explored students at the demographic level along with their final award (gender, age, ethnic background), then model 2, built on the first. This included the same demographics as well as pre university circumstances, such as neighbourhood affluence, polar, household income, socio-economic status, previous qualifications etc. and their final award and then model 3 built on the previous 2, along with engagement at university in lectures, extracurricular activities, participation in clubs and societies etc. to explore the effects of individual agency on the effects of institutional structures.

The purpose of these models was to acknowledge the cultural capital and habitus a person accrues prior to higher education and how they ultimately have an impact on individual decisions. For example, the models meant that the effects of different factors could be seen from a theoretical perspective as well as the statistics themselves – factors outside of their control such as demographics, model 2 considered the impact of dispositions/habitus and model 3 took into consideration individual agency acknowledging these structural factors. The models were created with the understanding that human beings do not act in a vacuum, there are other factors in play such as the theoretical work of Bourdieu (1984) via habitus, cultural/institutional habitus as well as the bioecological systems theory developed by Bronfenbrenner (1979) and how there is still agency despite structural barriers (Archer, 2010).

As this was insider research to an extent, having been a non-traditional student 12 years ago prior to the research and having gone through a similar process as them; by considering my own positionality, acknowledging it and being reflexive; I was able to

provide a voice to those who may not have had the opportunity to do so otherwise. Traditionally, 'voice' in research is associated to qualitative methods, however, this can be achieved in quantitative methodology too, via RQM. The impact of the research initially had a significant and direct impact on policy and practise within the department of Sociology and Criminology, as well as student experience, but went onto influence strategy of other faculties and the central university. Impact from this research included implementing anonymous marking as a required priority, considering intersectionality when comparing final award, focussing on commuting students especially when exploring the effects of belonging and community, ensuring student voice is heard and actioned on by the author creating student advisory boards to discuss education strategy amongst other topics, and essentially the curriculum. The author also created a series of training sessions for staff to raise awareness of the lack of diversity in the curriculum – in both the content of the programme as well as the recommended reading lists, in their capacity as the Equity, Diversity and Inclusivity Lead for the department where informal discussions of the issues, how it is everyone's collective responsibility and what support would be useful to achieve better belonging. This included diversifying resources, the authors, the format and most importantly, finding relevant sources from non-euro centric databases with support from the library. This was achievable by using RQM to really challenge the status quo, to rectify injustices that are experienced by racially minoritized students in higher education such as structural and institutional racism; by exploring my own positionality, taking the benefits of quantitative methods to provide evidence, and embedding reflexivity throughout the whole process.

RQM is useful for research led teaching and curriculum design but is useful for all research. It allows for researchers to acknowledge the continued effects of colonialism and euro-centric ideology in all aspects of research, especially when the research population includes people from a variety of backgrounds. Regarding researching the inequalities in higher education, it can help to decolonise the curriculum and other quantitative spaces within the sector. RQM allows space to consider your own positionality as this

helps with considering the power dynamics between the researcher and research population (Gillborn, Warmington & Demack, 2018), by interrogating the statistics to challenge the status quo. In surveys this can be lecturers and students, third sector organisations and service users, or other relationships that may influence responses to either answer in a way they think would be best received or to avoid answering truthfully. By the researcher acknowledging the power dynamics within the research, it allows for better transparency. RQM can also help with how marginalised groups are accessed, as often there is a need to build trust with the marginalised group that is being studied – by building networks with existing groups/organisation to better understand the research population. It can be more inclusive by considering language and cultural norms which fosters community and a better sense of belonging within student body, faculty, and society at large.

When researchers make decisions of what to research, what to ask in the survey, or what variables to pick, there are elements of us and our individual viewpoints in these decisions, so rather than ignore it, it would be more beneficial to acknowledge it, be transparent, reject the notion of complete objectivity and allow it to strengthen the research. Whilst this may sound radical, it's not; it should be the norm (Jamieson, Govaart and Pownall, 2023; Garcia, Lopez and Perez, 2017). Part of this includes to really examine measurement – what are we trying to measure, why do we want to measure it and how are we going to measure it, are important questions to consider during the research process as they underpin the data analysis and therefore results (Lazard and MacVoy, 2020). By researchers reflecting on their positionality when making design choices, it allows us to be more mindful and make conscious choices to include other voices, so all our students (or research population) can see themselves in the final output, rather than subjects discarded after data collection. Statistics must not simply further an agenda without considering the consequences on the research population (such as the higher education agenda of improving the awarding gap metrics) but make a positive impact towards a more equitable and diverse experience for racially diverse students, where all students can thrive. There must be some kind of mutual benefit to the researcher

(data collection) and to the participants (elevating their voice). Furthermore, statistics and numbers must be interrogated for the role they play in keeping the status quo unchallenged (Demack 2023; Gillborn, Warmington & Demack, 2018).

How to use Reflexive Quantitative Methodologies (RQM) in research

The research design from the moment of conception must begin to embed the RQM model which can begin reflecting on questions of why this topic and not another, and when making decisions of specifics, why are those groups being researched, and why the method that's been selected. All these earlier stage decisions must be considered, recorded, and reflected on. These are the cornerstones of the research, and as such must be given the same weight of importance as the data collection or data analysis stages. This can begin with a positionality statement. There are no prescribed methods of how to do this, but instead in whatever way feels natural; for some this will be writing with paper and pen, for some using reflective models for guidance, such as Bourdieu's (1992) three forms of reflexivity; social positionality, disciplinary positionality (field), and theoretical bias; and for others it will mean something else. However, the key thing is to make a commitment to reflect on your positionality and where you are situated within the context of the research. It is worth doing a full positionality statement and perhaps redacting elements before publishing, so the researcher's thought process is recorded internally, whilst taking efforts to protect one's identity too. This connection between the researcher's positionality with the research design is crucial to recognise that the decision process is intimately connected to the researcher.

When designing the research, whether it is primary or secondary in nature, taking field notes and reflecting regularly at each stage of the research design will be an important aspect to both make conscious decisions, as well as a providing written records to look back on when

at a later stage. Inevitably, things change during the research process, what one initially intended, may become outside of the scope of the project, and then these field notes become an extremely valuable source to look back on to readjust and calibrate to work towards the overall goals of the project. When taking regular field notes, consider what decisions are being made, and why, from the outset (Willig 2013), how things may change over time, other decisions that are made and then retrospectively at the end to turn those reflections into actions. As a reflexive quantitative researcher, it is important to really engage with where you are situated in that research design, similarly to qualitative researchers, however, by implanting and embedding the most beneficial aspects of the two methodologies, i.e., RQM, will mean a much more nuanced method of reflexive research and consequent impact. Where RQM could be the catalyst for a more in-depth, detailed focus on reflexivity, during the process of research design, actively conducting the research and learning from it when interpreting and disseminating it.

Being reflexive by reflecting both at the beginning, during, and at the end of the project allows the research to really make an impact, by creating action points beyond how to conduct the research differently. Being reflexive throughout ensures key points to feed into policy and practise to be implemented in a practical sense and shared widely to ensure maximum impact. By researching a specific group, especially those from a marginalised background, the researcher has a certain amount of responsibility to them, to improve their experiences or situation, to balance the inequalities they face and generally reduce social injustice. However, whilst these are specific steps research can take, it should not only be up to the individual researcher to implement this in their own work, but RQM as a concept must be taken up by the sector more widely. For reflexivity to really make a positive impact in eradicating social injustice, and in social science research in particular, journals and editors must value reflexivity in quantitative research, encourage for it be integrated into methodologies and facilitate positionality statements in publications (Jamieson, Govaart and Pownall, 2023).

Concluding remarks

This paper has outlined what RQM (reflexive quantitative methodologies) is, why it is important for all researchers to embed within their practise and has provided some examples of how to do this in a practical sense. As RQM and being reflexive in research becomes more widely practised, other ways to incorporate it will become known. These must be continued to be shared to continue improving the way quantitative research is conducted and interpreted. In the case of the current author, RQM was first used in their doctoral research beginning in 2017, which was investigating the awarding gap in higher education. RQM influenced every stage of the research from conception, research design, selecting variables, creating the model, data analysis and interpretation to recommendations. The results and consequent recommendations were affected by reflexivity too, because rather than just report the differences, it enabled research led teaching. But more importantly, it enabled racially minoritised and other marginalised students to be considered beyond surface level comparisons. The concept of RQM and its core elements have been received well by students, who perceive this level of deep thought to be empowering. Similarly, the sector both in terms of higher education and the social sciences, must take reflexivity seriously, reject the notion of complete objectivity in social science research, be very transparent regarding the decision process in research design and avoid the qualitative and quantitative divide. By taking on RQM in all aspects of research, it can only enhance and improve the quality of what is produced.

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Accessibility and Relevance of Quantitative Methods in Economics

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Introduction

This paper argues for a review of the Economics teaching of quantitative methods in two directions. On the one hand, to improve its accessibility and relevance which are often argued to be one of the pillars of the decolonisation of curricula across disciplines. And on the other, hand, to include other methodologies to reflect the heterogeneity of schools of thought in the discipline.

This paper invites a reflection of how undergraduate and postgraduate econometrics is taught, as we face unprecedented data processing and computational and technological powers, and in a world where information is widely available and often confounded with knowledge. It will firstly discuss and illustrate how teaching guided by models of learning and keeping the student and learning outcomes in mind can be successful and adaptable alternatives to the status quo, and a step towards decolonisation.

Secondly, the Economics QAA benchmark (Quality Assurance Agency, 2023) only acknowledges Econometrics as a sufficient research method in the Economics curriculum. However, developments in the scope and relevance of heterodox and alternative to mainstream schools of thought in Economics require the discipline to recognise the value of other methodologies as core to progressing knowledge, and to actively engaging and influencing the direction and continuing relevance of the discipline into the future.

1. Stripping layers of obscurantism from Econometrics and statistics teaching

It is often argued that effective and transformative decolonisation in teaching and research requires tackling three pillars: accessibility, representation and accuracy. While other papers in this volume will make a strong case for the importance of transformative representation, inclusion and rightful acknowledgement of knowledges, and for accuracy or the absence of historical and power-driven biases (see e.g Zwiener-Collins et al., 2023 and Olsson, 2023) in the teaching of quantitative methods in Social Sciences, this paper focusses on the practice of decolonisation via the accessibility and equity of knowledge acquisition. Education is often argued to be a tool for upward mobility and poverty reduction (Boateng, 2014) but it can be used to deepen social hierarchies (Bourdieu, 1973), especially if curricula remain taught as when they were first developed, in a context where education was the privilege of a few, often wealthier and white men. This section will argue for the need to review the ways in which we teach quantitative methods in the UK, with the goal to strip away any unnecessary language, notation, or level of obscurantism which heavily relies on a path dependent elitist educational route, but which will be argued to be only peripheral in the teaching of key learning outcomes. To do so, both well tested models of teaching as well as models of learning are important, and so are considerations of resources and technologies available to teach. As discussed in Hofmeister and Mccullick (2016),

> Teaching models […] encompass theory, student and teacher interactions, domain priorities, instructional themes, research support, and valid assessments. Models allow teachers to deliver material using more organized, theory- and evidence-based approaches. Expert teachers often have an eclectic

approach that incorporates models as well as techniques not contained within models, but new and less skilled teachers may need models to ensure they are not "missing" critical components of teaching that lead to learning. (p. 271)

And may I add, evaluating the effectiveness of teaching may require its conceptualisation.

While most teaching in the UK is done in classrooms and lecture theatres, the learning by students benefits from alternatives to traditional lecture-based teaching, and tutor-led exercise-solving support. This overcomes the difficulties learners with lower social economic status or access to resources, as well as those for whom mathematics is too devoid of content to be relatable (all of which indirectly and disproportionately affect Black, Asian and Minority Ethnic (BAME) learners more), find in succeeding at mathematics (Aguilar, 2021). In particular, since most teaching is based on textbooks which require previous knowledge of mathematics and statistics, and of its language and notation, and is often led by this assumed shared language.

Kolb's learning cycle model (1984) defines learning as a process of abstract and concrete activity, building on reflection, making mental connections to related topics, making decisions, acting and then reflecting upon consequences of action. This model encourages active and enquiry-based learning, personalised learning, and is often enhanced by experiential and collaborative activities. Current curricula and teaching are often heavily content driven and do not leave room for creating learning spaces for students as individuals or in a group.

According to Biggs (2003), effective teaching however requires learners to build up and construct their own learning, with a clear sight of the direction of travel. With Biggs' notion of constructive alignment, teaching becomes the facilitation of learning and not an end in itself. Biggs' constructive alignment mirrors the principles of self-directed, self-reflective, student-centred learning and teaching in Nunan and Lamb (1996).

Assessment, formative and summative, become an integral part of the learning journey, and are used to further and deepen learning.

Assessment which is designed and planned together with the triad below becomes as much teaching as it is learning.
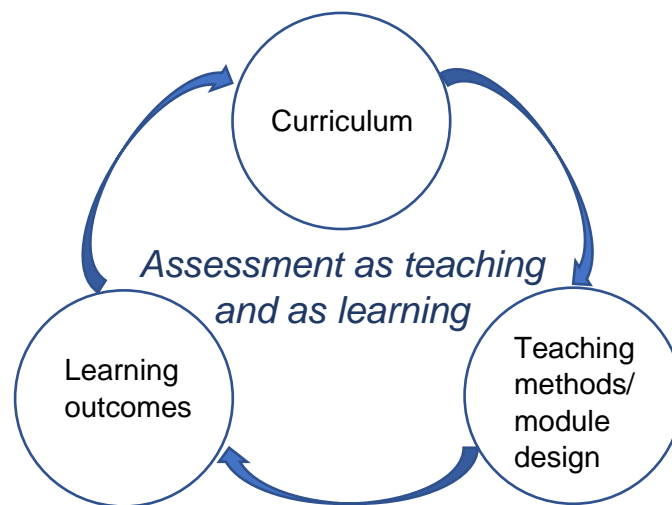
With a constructive alignment approach to producing a module, assessment - both formative and summative - culminates in both teaching and learning.

Fialho (2024) discusses the perspective of the educators when thinking about the decolonisation of quantitative methods teaching. A key difficulty is the letting go of the syllabus as a guide to teaching, and to focus instead on the key learning outcomes they should achieve, or on which they are being assessed. For instance, and as an example, let's consider two approaches to teaching hypothesis testing, when the learning outcome is the *application* of a statistical test to different problems:

a) Presenting the test statistic to students, deriving its statistical distribution, and by defining type I and type II error, explaining the confidence and critical regions, the critical value, and the workings of the test. Once the theory is explained, students can practise by repeating the mechanics of the statistical test for different applications.

b) Presenting a problem which requires a test; students experiment with generating a relevant sample, and try samples of different sizes, and from distributions with different variability to see how these parameters matter for the shape of

the distribution (and ultimately, for the power of the statistical test); using simulations, students can see the impact of the shape of the distribution on where the test statistic lies relative to the true value; the mechanics of the test and general result are then drawn out from this set of activities.

The content is heavier in approach a) while the attainment of the key learning outcome is deeper in approach b).

Accessibility of quantitative methods, in particular of econometrics, and in a context where ICT technologies and generative AI facilitate access to and replication of existing information, requires the development of critical engagement and a break in the transmission of the same content from cohort to cohort of students as well as of educators. Content-heavy statistics and econometrics curricula need to be reviewed and stripped down to core learning outcomes to equip learners with a more relevant and accessible skill set, and ultimately to comply with the 21st century skills framework (Joynes et al., 2019).

2. How can Economics remain relevant and generate new knowledge?

Many cohorts of students graduating in UK universities have repeatedly used Econometrics as a way to test an economic theory. Research results are often discussed in terms of the strength of the evidence in favour or against a null hypothesis, and the analysis and discussion section of an applied economic paper will analyse if any statistical evidence survives a thorough list of robustness checks. This is brought into question in this paper for several reasons. Methodologically, because confirming or rejecting a pre-existing hypothesis adds little to the knowledge and scrutiny economic theory requires to remain relevant in a fast-changing world. Recent events and crises have shown that economic theory and policy respond weakly (if at all) to evidence which established theories cannot explain. During the 2007-2008 financial crises, many renowned economists and policy advisors had very little to say about the emergence of this crisis, other than *we did not see it coming*, or

the notorious Greenspan "I found a flaw" quote (Beattie and Politi, 2008). While both the economics teaching curriculum in terms of economic theory, as well as the policy instruments used in practice were modified as a result of the crisis, little has occurred in terms of questioning the knowledge generating systems of higher education institutions (or challenging the structural power relations as Davidson (2024) defines these), which continue to rely almost exclusively on econometrics, and almost exclusively on confirmatory and deductive approaches.

The argument that the economics curriculum and economic theory cannot be decolonised while knowledge progresses mostly with confirmatory analysis conducted on global north's data is an argument recently made by many scholars (Held, 2019). And here Global *North* is being used as a shortcut for countries such as the US, UK, Germany, or Australia, whose data populates the vast majority of published work in top Economics journals. Many scholars have challenged this perpetuation of relevant knowledge by using data from the Global South instead and by signalling the extent to which data and research done on the Global South is often a form of colonisation itself (Davidson, 2024). So until research opens up and invites knowledge generation based on evidence and the realities from the Global South, and while data itself and what and how variables are measured need to remain *comparable* to existing data produced in the Global North, advances in knowledge remain limited and not contested enough. As an example, standardizing the measurement of work across the globe, has meant leaving unpaid work out of the definition of work which, in the Global north, is concerned and for historical reasons, only with work performed to generate national income and output. Leaving out unpaid work and unpaid care is a disservice to large segments of the world population whose work is not compensated via marketable exchanges, and in particular to women for often being the ones staying at home. Only recently the International Labour Organization (ILO) is reviewing its definition of work to include unpaid work, including unpaid care), after two centuries where dominant research approaches have defined work as paid employment (Watson, 2024).

Heterodox and pluralist Economics is the umbrella term for all other than mainstream Economics. Keynesian Economics, while popular between the end of the Second World War and the global economic crises in the 1970s, has been revived by post-Keynesianism and neo-Keynesianism. Marxist Economics has been added to the curriculum of some universities. And so has Schumpeterian ideas. These alternative schools of thought not only use econometrics quite sparingly, they also rely on a wide array of data formats, and a wide array of research methods beyond econometrics, which include primary and secondary qualitative methods, as well as quantitative computationally intensive agent-based modelling (Mearman, 2012). And while ideas from heterodox Economics are permeating universities, left wing party electoral programmes, and central banks' economic models, the discipline's quality assurance benchmarks lag behind by not recognising the value of training current and future Economics graduates with alternatives to econometric deductive methods. According to Sabaratnam (2011),

> Decolonising strategies, through pluralising the subjects of inquiry, offer an intellectual platform for making good the ambition of a discipline that has been trying to transcend its imperial, colonial and racist roots. (p.17)

Social inquiry cannot be pluralised and remain relevant if methods of inquiry are not.

3. Conclusion

This paper has made two contributions. By discussing experiential and constructivist methods of learning, it proposes an improvement in the accessibility and equity of quantitative methods teaching in the Social Sciences and in Economics in particular, via a focus on learning outcomes and more student-centred teaching strategies. This shift would comply with the 21st century skills framework this discipline is still mostly unresponsive to.

The second contribution is to emphasise the need to decolonise the Economics curriculum also via the engagement with alternative to mainstream schools of thought which cannot be done without

reviewing the methods of inquiry of the discipline. As long as the Economics benchmark only recognises Econometrics as the research method all Economics degrees need to engage with, and excludes the need to engage with the multiplicity of methods in social enquiries, decolonisation remains an option and not a moral transformative reform.

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