Unravelling the Global Wool Assemblage: Researching Place and Production Networks in the Global Countryside

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Abstract

This article applies an assemblage reading to the contemporary global woollen industry to demonstrate how assemblage thinking has value as a methodology for generating insights into the local impact of global economic restructuring; bridging concerns with the relationality of rural places and translocal production networks. Putting assemblage into research practice, we trace the interactions and interdependencies between human and non-human, organic and inorganic, technical and natural components of the global wool assemblage from the entry point of Newtown in mid-Wales. In so doing, we call attention to those critical moments in this schema that may be usefully exposed or explored via the concept of assemblage. Here we consider the agency of non-human actors, as well as the biological, technological, regulatory and marketing regimes that seek to produce wool as a globally mobile commodity. Through their enrolment in these sets of relations, Welsh farmers are exposed to the effects of spatially dispersed and contingent dynamics. Using the example of wool we develop a broad argument for using a framework of assemblage alongside other critical theories as a means of grasping how rural societies, places and communities are negotiating change in the context of globalisation.

Introduction

One of the most prominent features of contemporary rural localities is the way in which traditional rural economies have become woven into transnational networks of production and consumption. These entanglements have implicitly forged new connections, interdependencies and affinities between rural places and other, often distant, rural and urban localities. At the same time, the commodity

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chain concerned may become increasingly detached from the originating locality, as key functions in planning, production, processing, sales and consumption are relocated elsewhere, even if a symbolic relationship persists between the place and the commodity.

Despite the prevalence of this process in rural areas across the world, the body of research that has attempted to examine the reframing and refashioning of rural localities in response to processes of elongation remains limited. Indeed, we have only partial glimpses of the dynamics, as research on the relationality of rural places and research on globalising commodity chains have tended to be approached through different bodies of literature, employing different methods and analytical frameworks.

On the one hand, the notion that rural places are constituted by relations between human and non-human components has been a recurrent theme within rural studies over the last 25 years, as captured in concepts of networked rurality (Murdoch 1997, 2000), the hybrid countryside (Murdoch 2003), the global countryside (Woods 2007), and the relational rural (Heley and Jones 2012), among others. These approaches can identify the ways in which key agricultural or natural resource commodities and their supporting infrastructure are central to the constitution of rural places, but as placecentric perspectives are essentially only interested in those aspects of commodity chains that are situated in the place concerned.

At the same time, the pursuit of relational economic geography has led to the development and adoption of global value chain analysis as well as spawning the related global production network approach (Dicken *et al.* 2001; Coe *et al.*. 2004, 2008; Stringer and Le Heron 2008; Coe and Yeung 2015). Highlighting the organisational dispersal and governance of such chains or networks across many scales, these frameworks provide some insight into how and why certain people and places are incorporated into production systems in order to create value (Kelly 2013); yet, as firmcentric models, their treatment of place is often narrowly framed.

In an attempt to bridge these conceptual gaps, this article follows other recent calls in the realms of rural studies (including Carolan and Stuart 2014; Marsden 2016; Willett and Lang 2017) to consider the value of assemblage thinking as a method for examining the enrolment and remaking of rural localities through and within globalisation processes (Woods 2007). Assemblage approaches understand the social realm as 'materially heterogeneous, practice-based, emergent and processual' (McFarlane 2009, p. 561), which, when translated into research practice, foregrounds an attention to processes of both stability and change. As Baker and McGuirk (2017, p. 431) elaborate:

> *In methodological terms, a focus on the processes through which assemblages come into and out of being lends itself to careful genealogical tracing of how past alignments and associations have informed the present and how contemporary conditions and actants are crystalizing new conditions of possibility.*

The goal of this article is therefore to demonstrate how assemblage thinking has value as a research methodology for generating insights into the local impact of global economic restructuring, by examining the ways in which globalisation works

through places over time as a grounded phenomenon. A key tenet of assemblage thinking (to be elaborated further in the following section), which draws together place-based and network approaches, is the understanding that assemblages are not discreet wholes or seemless totalities (DeLanda 2016). Rather, assemblages are in constant interaction with other assemblages, such that we can consider how place assemblages interact with translocal production assemblages, and how these relations have been and continue to be changed through globalisation. Production networks comprise shifting and temporary arrangements of human and non-human components in specific sites – sites that are variously connected to (and disconnected from) other sites through translocal flows of trade, finance, information, regulation, culture and values. Understanding how and why these arrangements come into being, are maintained and break apart can offer insights into how rural places and economies may respond to future processes of change.

We test this assemblage approach through an illustrative study of the woollen industry, and specifically the significance of the market town of Newtown in mid-Wales as a site where the local sheep farming assemblage becomes attached to the internationalised commodity chains of the global wool assemblage. With the relationship between Newtown and wool extending back centuries, our analyses will consider how and why this relationship has been reconfigured in the twentieth and twenty-first centuries (see Roche 1995; Jenkins 2005). This includes an attention to the ways in which Newtown has been repositioned in relation to other sites in the wool production assemblage through processes such as technological change, regulation, investment/divestment and market making, as well as to the distributed agency of human and non-human components in these processes. While components and the relations between them may change over time, the persistence of wool production in Newtown furthermore draws attention to the institutional and cultural embeddedness of other assemblages (Welsh sheep farming).

In the next section, we elaborate further on conceptual approaches concerned with the impacts of globalisation processes on rural societies and economies, including relational rural geographies, the global commodity chain and global production network models. We then introduce the key tenets of assemblage thinking and methodologies by explicit engagement with the work of Manuel DeLanda (2006, 2016). We then proceed to summarise our research methods briefly, before working through an example of the intersections of place and economy in the case of Newtown's shifting role in the woollen industry. In concluding, we reflect upon the relative strengths and limitations of the assemblage approach for revealing and interrogating ongoing processes of rural change.

Relational approaches to rural place and production networks

The relational perspective in rural studies has gained traction since the turn of the century, responding in part to concerns about the overreach of cultural, discursive approaches in rural geography and the desire to reintroduce more consideration of material factors (Cloke 2006; Woods 2009). Thus, the relational turn in rural

studies has occurred in parallel with the more prominent tendency towards thinking space relationally that – although not easily encapsulated – calls attention to the importance of networks and connections alongside territory in analyses of social interactions. Cast in this light, studies of local and regional economies are not so much concerned with determining boundaries, but rather with how to 'identify and trace the various connections and articulations which operate within and beyond it' (Goodwin 2013, p. 1182).

If thinking space relationally became a prominent academic mantra in regional studies and political geographies in from the mid-2000s onwards (see Massey 2005), its application in more determinedly sociological contexts was initially skewed towards urban studies, whereby shifting geographies of urban development and extending, transnational flows of people, goods, money and ideas have seemingly ushered in a new era of urbanisation (Jones 2010; see also Amin 2004). By way of contrast, considerations of rurality in networked terms were arguably more concerned with materiality; examining the co-constitution of the rural by human and non-human actors and their embeddedness in wider social, technological and economic networks (Murdoch 1997, 2000). Drawing much inspiration from actor-network theory (Murdoch 1997, 2000; see also Woods 1998Enticott 1998; Whatmore 2002; Cloke and Perkins 2005; Jones 2006 for other applications of actor-network theory in rural studies), this work developed and broadened the language to encompass a hybrid countryside that could be examined in various ways but which necessarily eluded simple capture in its entirety (Murdoch 2003, 2006).

Echoing the more urban-focused conceptualisation of space by Doreen Massey (2005), both Massey and Murdoch situated places as sites of entanglements within matrices of wider global relations, thus pointing not only to the pervasiveness of globalisation in rural as well as urban spaces but also to its reproduction through local places; rejecting top-down and urbancentric accounts of globalisation. This line of thought was developed further by Woods (2007) via the concept of the global countryside as a hybrid space in which rural localities are being transformed by the interaction of global forces with extant local components to forge new places. It has also been addressed by Heley and Jones (2012), who propose new methodological approaches for studying the relational rural. Collectively, these approaches provide a framework for studying the hybrid and interconnected form of rural communities; yet a primary concern with analyses of localities means they are not predisposed to follow the networks that emerge from and run through rural localities or to probe too deeply into the production and reproduction of these arrangements (see Head *et al.*. 2012).

At the same time as rural geographers have grappled with the relationality of rural places, work in economic geography has increasingly come to focus on the networks that constitute processes of production and consumption and that enable them to be organised across (global) space. These hidden geographies of everyday commodities have been exposed in the 'follow-the-thing' methodology pioneered by Cook (2004), and in the evolution of commodity chain analysis into the global value chain approach, which includes a mapping of the territoriality of the chain components

(Stringer and Le Heron 2008; Challies and Murray 2011). The development of the related global production networks approach brought further attention to the grounding of production in specific locales through its embedding in social and governance structures (Dicken *et al*.. 2001; Coe *et al*.. 2008). These concepts have been extensively deployed by agrarian scholars to explore the development of the global agri-food system by examining shifting networks of production, supply and consumption across a range of commodities (see, for example, Daviron and Ponte 2005; Echánove 2005).

These relational perspectives from economic geography provide insights into how the products of rural economies are enrolled into global networks, and how interactions with place are shaped by the dynamics of (trans)national structures and institutions. However, in focusing on either the commodity (global value chain analysis) or the corporation (global production network), these approaches have a relatively narrow vision in which their engagement with place is partial and does not extend beyond those components with direct transactional linkages to the network (see Kelly 2013). In this way, little consideration is given to other components of locality such as landscape and the environment, or the role of cultural and historical practices, institutions and policy regimes in creating the possibility for particular development trajectories to take hold. In seeking to develop the relational approach to rural localities more fully, we argue that an assemblage approach can provide analytical insights into the provisional and contingent enrolment of rural commodities and communities into translocal configurations over time.

Towards an assemblage approach

Assemblage thinking refers to a body of social theory that emphasises the heterogeneity, dynamism and indeterminacy of social formations. One of the attractions of assemblage thinking is its flexibility of application, allowing for various points of entry for analysis. At the same time, the ambiguities and inconsistencies present in different strands of assemblage thinking can present challenges (Acuto 2013; Acuto and Curtis 2014). Nevertheless, some core traits can be identified.

Informed by diverse theoretical foundations drawn from Deleuze and Guattari, Foucault and Latour, assemblage theory is broadly concerned with seeking to understand the contingent relationships between a complex socio-spatial whole and its constituent parts – be it a place, an event, a policy regime, or even a politico-economic system. It does this by examining how diverse human and non-human elements relate and interact such that the whole hangs together in some form of provisional unity (Anderson and McFarlane 2011). Processes of co-production and emergence are achieved through the coming together of heterogeneous actants, who have different capacities to act and effect, spatially and temporally. This foregrounds an attentiveness to the distribution of power across assemblages (Bennett 2005); leading Willett and Lang to recently argue in this journal that 'assemblages provide a conceptual architecture which can acknowledge the possibilities of agency in peripheries' (Willett and Lang 2017, p. 260). Assemblages furthermore emphasise process and

provisionality. Thus, rather than seeking to understand how a particular structure has been achieved through the coming together of heterogeneous actors (as in actor-network theory approaches), an assemblage perspective is more concerned with 'continuing trajectories and future possibilities or becomings' (Bear 2012, p. 24). In this way, an assemblage approach can offer a means of unsettling predetermined understandings of structural, institutional or scalar contexts by offering a way to see 'structures emerge as relational products assembled through multiple routes, actors, histories, contingencies, resources, socio-materialities and power relations' (McFarlane 2011, p. 379).

Although assemblage thinking has gained popularity in human geography and sociology in recent years, its empirical application has predominantly concerned the city and accounts of assemblage urbanism (Farais and Bender 2010; Latham and McCormack 2010). The relatively few examples of rural-focused applications of assemblage thinking include Li's (2007, 2014) explorations of the global land assemblage, Hollander's (2010) work on sugar and the ethanol assemblage and Rankin's (2008) work on rural microfinance. Ouma (2015) similarly investigates the assembling of export markets for rural produce from West Africa, with an analysis of institutional structures and environmental embeddedness that echoes aspects of the global production network approach, but is conducted through a Foucauldian lens that pays more attention to questions of power, discourse, contingency and distributed agency.

In these cases, the focus is not on rural localities as assemblages, but on the engagement of rural economies with transnational assemblages, with the emphasis on discursive framing and the acts of enrolment of heterogenous components. These studies provide some guidance to us for analysing the wool assemblage emerging from mid-Wales. However, in order to probe deeper into the materialities of the assemblage, we draw on a second strand of assemblage thinking developed by Manuel DeLanda.

Doing assemblage

Baker and McGuirk (2017) suggest that, while opinions differ on the ontological status and explanatory powers of assemblage, including its perceived complementarity with other strands of critical theory (see Brenner *et al*.. 2011; McFarlane 2011, 2011), there is 'loose consensus around the value of assemblage thinking as a methodological framework' (p. 429). Through its methodological application, an assemblage approach allows for the identification and disaggregation of a series of interrelated processes that bring (temporary) stability and meaning to our locally embedded, relationally constituted worlds. By drawing out these processes, and the heterogeneous components through which they act (the how and what of assembling), we can unpack the black box of how certain arrangements came into being and are actively maintained, and how new conditions of possibility may therefore emerge.

This practical application of assemblage thinking is usefully articulated in the Deleuzian-inspired framework for assemblage analysis set out by DeLanda (2006, 2016). Among the core attributes of assemblages identified by DeLanda is the means

through which an assemblage is continuously stabilised and destabilised through processes of *territorialisation* and *deterritorialisation*. Territorialisation can involve the reinforcement of the spatial boundaries or footprint of an assemblage, but also non-spatial (exclusionary) processes that work towards increasing its internal homogeneity. Deterritorialising processes, conversely, destabilise spatial boundaries or increase the internal heterogeneity of the assemblage. For example, the closure of a textile manufacturing facility in one part of the world can lead to the *reterritorialisation* of the assemblage elsewhere as production shifts to sites identified as more competitive within a global marketplace. At the same time, assemblages are never discrete as they are always interacting with other assemblages. For DeLanda, this means that assemblages are in part defined by the exteriority of their relations in that the capacities of an assemblage 'do depend on a component's properties but cannot be reduced to them since they involve reference to the properties of other interacting entities, (DeLanda 2005, p. 11). It follows that, as multiple assemblages coexist, an individual entity such as a sheep may be a component of many different assemblages at the same time or at different times during its life course (e.g., wool assemblage, meat production assemblage, farm assemblage and/or eco-systems services assemblage).

Another core attribute of an assemblage for DeLanda is that the individual components can simultaneously carry out material and expressive roles integral to the functioning of that set of relations, bringing in a discursive dimension that extends the material focus of actor-network theory. These concerns are evident within the work of Pawson and Perkins (2013) on the shifting dynamics of the New Zealand wool industry. Although these authors do not explicitly referencing the work of DeLanda, they apply an assemblage reading to the myriad of organic and inorganic participants who are involved in various attempts to capture and add value through the creation of new wool products and brands. As will become clear, however, the materiality of Newtown wool differs considerably from the fine wool worlds of New Zealand merino, which concomitantly shapes the expressive role it is able to fulfil.

Finally, DeLanda demonstrates how an assemblage is given identity through processes of coding, including forms of representation and classification, which differentiate it from other assemblages – as well as showing how those meanings can change and shift over time, potentially leading to greater internal heterogeneity (decoding). For example, a place might be coded as rural in terms of official statistical measures, thus ensuring its eligibility for participation in rural development programmes or funding applications.

This framework allows us to identify significant moments and actions through which processes of assembling and disassembling in the context of wool production occur. At the same time, while DeLanda provides a methodological framework of assemblage analysis, there is less explication on its translation into research practice (see Marcus and Saka 2006; Fox and Alldred 2015). In relation to the field of critical policy studies, although with wider applicability, Baker and McGuirk (2017) propose 'three practices that help operationalise the commitments of assemblage methodologies'. These are '(i) adopting an ethnographic sensibility; (ii) tracing sites and

situations, and (iii) revealing labours of assembling.' (p. 433). Each of these elements was similarly incorporated into our research design, as outlined below.

Case study and methods

This study emerges from a research project examining globalisation and rural localities within which Newtown was the site of an in-depth locality study over a 3-year period (2015–2018). It employed ethnographic techniques alongside in-depth interviewing and combined qualitative methods in order to explore the workings of everyday globalisation through a small town. The case of Newtown's place in a global wool production assemblage is an illustrative and specific example of the local impacts of globalisation; highlighting as it does the interconnectedness and continuity of Welsh sheep farming in the context of international commodity markets (Berry 2017).

Data collection followed an inductive and ethnographically orientated approach, based on tracing sites and situations (McCann and Ward 2012). In this way, the spatiality of our methodological focus was not predetermined, in line with the commitment to openness and uncertainty associated with assemblage thinking. This involved identifying and tracing relations and connections in the wool industry outwards from the starting point of Newtown and, more specifically, from a particular flock of sheep on one Welsh farm. This farm was identified through contacts developed within the context of the broader research study and chosen as illustrative of the type of farming undertaken in the region. This was followed by field visits to the sheep farm in question, the British Wool Marketing Board's (BWMB) grading depot in Newtown as well as their headquarters in Bradford, and to a wool scouring and combing facility, also in Bradford, as well as meetings with woollen craft producers in mid-Wales over a 6-month period. Data were collected via field observation, conversations, photographs and semi-structured interviews with individuals working with wool in different capacities across these sites. This primary data collection was contextualised through wool industry reports, publications and trade data, which draw attention to some of the logistical and regulatory aspects of the wool assemblage, in addition to historical accounts of the Welsh textile industry.

At each of these research sites we sought to identify the grounded and multiple forms of work that bring the wool production assemblage into being. This involved paying attention to the agency of non-human components in the assemblage including sheep, land, agricultural inputs, climate, processing machinery and sites, the transportation and communications infrastructure, and marketing materials. In this way, we were able to identify the critical translational roles performed by key actors and technologies in transforming wool from mid-Wales into a globally traded commodity. The first of these sites to be discussed within the article is Newtown itself, which provides the entry point into the assemblage. History matters within an assemblage approach, as the relations, properties and actions of different components shift over time, with each iteration in part shaping the field of

future possibility. The following section therefore begins by briefly setting out the relationship between Newtown and wool production in this historical-materialist vein.

Placing Newtown wool

For Newtown and its hinterlands, the wool and textile industry has played a key role in shaping this social and economic landscape for over two centuries. By the late eighteenth century Newtown had become a small market town serving the needs of an agricultural hinterland. However, the mechanisation of textile processes such as carding and spinning led to a period of industrial development, such that by the 1820s Newtown was the largest production centre for woollen flannel fabrics in Wales. The reterritorialisation of wool production in Newtown from the domestic to the commercial sphere was accompanied by the rapid growth of the town's population, in addition to its buildings and infrastructure.[1]

Another key non-human component in facilitating the rapid expansion of Newtown's woollen trade was the River Severn, upon which the town is located. The river provided power for the textile mills as well as forming a transport corridor along which the canal, and later the railway, were to be built; allowing local entrepreneurs to establish new export markets for Welsh flannel.[2] By the turn of the century, however, competition from the modern textile factories of northern England and – more recently – overseas, had pitched the Welsh flannel industry into terminal decline. The wool assemblage deterritorialised as the mills closed one by one and Newtown's socioeconomic structures and external trading connections were reconfigured, such that by the 1950s the last vestiges of small-scale wool processing in the town had ceased.[3] In the period since, the landscape of wool production has transformed significantly, with global changes in economic and social relations meaning that production, processing and consumption have become stretched, re-scaled and reorientated.

Wool nonetheless retains both material and expressive roles in contemporary Newtown's place assemblage: expressive in terms of its place in the town's heritage, identity and tourism offer, while buildings throughout the town such as former weaver's cottages and factories bear witness to the prior importance of textiles in the life of mid-Wales (Jenkins 2005). While the (large-scale) transformation of wool into finished textiles now takes place elsewhere, 'over a border' (Dittmer 2014, p. 387), both temporally (that is, over a century ago) and spatially (that is, in other nations and regions), Newtown continues to function as a site within the contemporary global woollen industry, connecting sheep grazing the surrounding hills and valleys with factories, processing plants and consumers the world over. As will become clear, however, the significance and expressive value attached to Newtown wool has shifted within the reterritorialised dynamics of the global wool assemblage from its previous coding as place-specific commodity ('Newtown flannel') to what is now marketed as British wool.

Tracing Newtown wool

On the farm

Sheep farming remains a highly significant part of the agricultural economy and culture of mid-Wales[4] despite the constraints of climate, soils and topography that lead to farmers' heavy reliance on subsidy payments to support farm incomes (Dwyer 2018).[5] One farmer working in this region is Martin, who runs a traditional 700-acre beef and sheep farm approximately 12 km from Newtown. Martin borrowed the money to import his first flock of Texel ewes directly from the breed's homeland in the Netherlands in 1981. The Texel breed was not common in the UK at that time but Martin recognised their potential to provide leaner lamb meat in response to supermarket demand, while being hardy enough for the Welsh upland climate. Martin's choice of Texel sheep thus had little to do with the quality of their wool and more to do with their viability in the sheep meat market. Nevertheless, fleeces shorn from Martin's Texels at the beginning of summer are duly packed and sold on a yearly basis, and form a tiny proportion of the UK's annual clip.

Compared with between 20–22% of the world wool output produced by both China and Australia, respectively, the UK produces approximately 2%. In the UK this equalled 29 million kg of wool produced from 22.9 million sheep and lambs in 2014 (British Wool Marketing Board [BWMB] 2015a; Department for Environment and Rural Affairs [DEFRA] 2015). Revenues received by farmers for this wool clip are now intrinsically linked to the world market situation following the impact of liberalisation policies, which saw the end of the guaranteed wool price paid to British farmers up until 1992. This led to the fall in the value per kg of wool from £1.22 to £0.25 as UK wool was recoded as a global product in a global market. A decade of stagnation followed before a period of slow recovery saw the greasy (unwashed) wool price jump to a peak of £1.84 per kg in 2011 (BWMB, 2015a). This increase in wool price is a direct result of demand; more particularly, demand driven by the sizeable growth in the processing and manufacturing capacity of China[6] coupled with a global wool supply shortage as a result of competition from beef and dairy production assemblages for land. In the UK, however, the entry of two different components into the sheep farming assemblage is more directly attributed with its deterritorialisation and a 40% contraction in sheep numbers witnessed over a decade which were first, the devastation caused by the 2001 foot and mouth disease outbreak and, second, the introduction of a new area payment subsidy regime following reforms to the Common Agricultural Policy.

Although the dictats of supply and demand have pushed the value of wool upward, wool production accounts for only approximately 5% of UK farm revenue (BWMB 2016). For most sheep farmers like Martin wool is generated simply as a by-product of meat production. Indeed, during the slump in the wool price following liberalisation many farmers would burn or bury wool on farm to dispose of it. Although things have since improved, for many sheep shearing continues to be understood as more of a welfare issue than an economic one. There are of course exceptions, and

particularly amongst small-scale smallholders who may be in a position to prioritise wool quality for direct sale to craft producers; a practice that Martin noted was happening outside the normal logics of sheep farming. In either case, we can see how non-human components (animals, climate and terrain) create effects within the farm assemblage. For Martin, this involves having to buy in additional labour at shearing time, squeezing the already limited profit margin that wool delivers:

> *We're talking about £5 a ewe at the most when it's costing you £1 just to pay the shearer. The actual gathering and then packing, because for every shearer you'll need probably one and a half men after to get the sheep in. Put them in the pen for somebody to shear them. So three shearers you'll easily need two other people and to work every bit as hard as the shearer to get the sheep in. To pack the wool. Sort the sheep and get them back in the fields and so on.*

Shearing draws additional actors into the wool production assemblage, including approximately 500 shearers from Australia and New Zealand who work in the UK every summer. Following shearing, the fleeces are packed and stored on the farm until they can be delivered to the wool grading depot in Newtown operated by the BWMB.

At the depot: the BWMB and wool grading

The BWMB was originally established in 1950 to operate a central marketing system for UK fleece wool. It is now the last Agricultural Commodities Board in the UK. Representing about 45,000 registered wool producers, ranging in size from small-scale hobby farms to large-scale industrialised agriculture, this system provides collective bargaining power within the international wool market. As a result, it has attracted criticism from some quarters for monopolising the wool market in the UK (Moran *et al*.. 1996). However, the BWMB may also be viewed in a more positive light by holding out against neoliberal policy and protecting the interests of small-scale producers. From either perspective, sheep farmers in mid-Wales are not required to negotiate the vagaries of the global market on an individual basis. Working with the BWMB, they are enrolled in a global production network involving other wool-producing countries, wool merchants and brokerage firms, processing and manufacturing companies, distributors, retailers and consumers, in addition to regulatory and institutional bodies.

The most direct connection to this array of actors is via a network of 11 wool grading depots across the UK, including the second largest one in Newtown. This network underwent significant restructuring and centralisation following the fall in the numbers of UK sheep. The Newtown depot was retained, as a BWMB employee notes, due to reasons of practicality and continuity:

> *[T]he reason it was Newtown I would imagine, would be the central location, the history, the site, the capacity that they've got here from an operational point of view to handle the wool.* (Huw)

In the 2013/2014 season, 5.5 million kg of wool arrived at the Newtown depot from 6,597 farms across north and mid-Wales and the English borders (BWMB 2014). As wool enters the Newtown depot it is taken to the grading tables where fleeces are

Figure 1: *Graded wool at the British Wool Marketing Board depot in Newtown, mid-Wales [Colour figure can be viewed at wileyonlinelibrary.com]*

metricised by eye and feel by qualified graders based on set criteria. Graders also look for evidence of debris and possible contaminants, or effects of climate on the fleece that would reduce its market value. Each fleece will then be assigned a grade number according to the type of sheep and the quality of the fleece.[7] The climate and terrain of mid-Wales is most suited to the hardy hill and mountain sheep breeds, whose coarser textured wool is primarily used in carpet manufacture.

While the grading process represents a first stage in wool being rendered knowable and meaningful to potential buyers, it conversely becomes less knowable in other ways. The diversity of UK sheep farming, in terms of the number of sheep breeds and variation in size of farm and flock, means that the BWMB operates through economies of scale; with wool from individual producers combined into larger lots of the same grade for sale via auction. It is at this point, upon leaving the grading tables, that the wool loses its individual farm provenance; becoming medium wool, grade number 345 from the Newtown depot, as opposed to Texel wool from Martin's farm (see Figure 1). This becomes important for how the wool can subsequently be marketed and valued in different consumer markets.

Lab testing and electronic auction

Once 400 kg of a particular grade of wool has been collected at the Newtown depot, it is taken to the packing machine and bale wrapped. A core sample of wool is taken from each of the graded lots and sent to an independent laboratory in Caernarfon,

Figure 2: *The auction room at Wool House, Bradford [Colour figure can be viewed at wileyonlinelibrary.com]*

north Wales, for testing of the fibres in line with an internationally recognised set of procedures specified by the International Wool Textile Organisation. Buyers do not physically see or touch the wool prior to its sale via electronic auction and therefore make purchasing decisions informed by the lab data. For example, micron count is used to measure the diameter of a wool fibre, with lower microns referring to a finer fibre and usually more valuable wool used in textile production.

In this way, the process of metrification and its associated technologies act as market devices that facilitate the onwards mobility of the wool, with its materiality replaced by metrics that allow it to be knowable and internationally traded (Callon *et al*.. 2007; Caliskan 2010). This process of coding takes place on behalf of wholesale buyers, operating as a language that makes little sense outside this small cohort of industry professionals, including to most farmers, therefore serving to reproduce structural asymmetries within the wool assemblage. This point was well made by Jerry, a senior manager at BWMB headquarters, during a tour of the premises:

> *They (the lab) provide technical information, such as micron, colour, vegetable matter, yield.... All technical information that doesn't mean anything to us, but to the buyer, you know, it's vital so that they can buy with confidence.*

These metrics allow users to categorise and value wool in a virtual space where spatially dispersed sellers and buyers are brought together (Dobeson 2016). This is not to suggest, however, that – paraphrasing Wójcik in their study of stock exchanges – wholesale wool trading is 'dissolving into a virtual space' (Wójcik 2007, p. 220). While the structure of the assemblage has certainly altered, and components have

been both territorialised (including computer screens) and deterritorialised (including the auctioneer's gavel), it remains very much grounded in specific sites. This includes the electronic auction itself, which representatives from the major wool trading companies attend at the BWMB headquarters in Bradford; placing their bids via computer terminals in a format based on Dutch flower trade auctions (see Figure 2).

Attending the bi-monthly auctions in person necessitates a degree of proximity and has contributed towards the continued territorialisation of infrastructural, skills and knowledge-based elements of the global wool assemblage in Bradford. Bradford lay at the heart of the nineteenth century textile industry boom, having eclipsed places such as Newtown due to its rapid industrialisation and urbanisation. While the reconfiguring of components and actors in the wool assemblage means that the city's role as a global textile capital has now passed, the level of expertise held in the locality, as well as its expressive role in the history of the trade, has ensured that a number of large companies who source, process and supply wools have remained in place. These include Standard Wool and Curtis Wool Direct.[8]

Primary processing and manufacture

Once sold, wool is transported from the grading depot to the purchaser's chosen scouring plant, which may be within the UK or overseas, to be cleaned and processed before it can be turned into a finished product. Wool merchants like Curtis will also import greasy wools from around the world into the UK, to be cleaned and processed in Bradford at the Haworth scouring facility. Here the materiality of the wool returns, as it undergoes an intensive cleaning process to remove approximately 30% of its starting weight in the form of grease. Traces of the sheep become components in other assemblages, as this grease is purified to make lanolin used in skin-care products, lubricants and waxes, and – more unexpectedly – as a high-cholesterol supplement to prawn feed for use in commercial aquaculture in South-East Asia.

Over 60% of the British wool clip is exported in an unprocessed (greasy) or semi-processed state to over 50 countries all over the world (BWMB 2015b), with, as noted, an increasing proportion of this destined for large-scale scouring facilities in China, where previously it might have gone to the Czech Republic. Both lower labour costs and environmental standards have been contributory factors in the growth of China's wool processing industry. Zhangjiagang, in China's Jiangsu province, is a major hub of early stage wool processing, with over 150 wool textile processing companies based in the city, which collectively have an annual processing capacity accounting for 15% of the world's annual textile output (China Daily 2015).

This reterritorialising of aspects of the global wool assemblage in China has, as noted, brought benefits to British farmers in terms of increased demand for wool. At the same time, there are economic implications for the wool processing industry in the UK, as noted by David, a representative of Curtis Wool:

> *China obviously is a big market where they have a lot of primary processing, scouring and combing. So there's a lot of business there, which goes out in greasy wool. But it's not processed in this*

country, which in a way is a shame that you're not adding value more within this country, but that is an effect of globalisation as well.

Unable to compete with China on cost, Haworth Scouring instead emphasise their technical and environmental knowledge as a form of value added, operating what they claim is one of the most environmentally sensitive scouring facilities in the world through its on-site effluent treatment and recycling of waste water; steps that some Chinese companies are now replicating as global consumers seek greater levels of corporate responsibility. Once the wool has been cleaned it undergoes several more stages of primary processing (carding, combing and, sometimes, blending) before it is spooled and spun into thread, which is then distributed to carpet and textile manufacturers.

Here the single biggest user of British wool is Brintons Carpets, with the wool from one in nine British sheep reportedly ending up in one of their carpets. In addition to its UK-based operation, Brintons operates vertically integrated manufacturing sites in India, Portugal and Poland, from where carpets will be distributed to UK and overseas markets. Not all British carpet manufacturers can operate on the same scale as Brintons, however, and smaller companies do not necessarily operate all aspects of the production process (such as yarn dyeing). It is therefore possible for four or five international companies to be brought into the assemblage before a finished British wool-coded carpet is produced. This coding is reinforced through the BWMB's licensing scheme, with the shepherd's crook trademark (for products containing at least 50% British wool) performing expressive value.

Marketing British wool

New ways of adding value to British wool products for differentiated international markets are being explored and implemented by the BWMB, drawing on various material and expressive facets of wool and wool production. An important premium market for the British wool industry is Japan, where there is a strong appreciation of the tradition, heritage and craft of British textiles and British fashion more broadly, being, for example, one of the major markets for hand-woven Harris Tweed (The Scotsman 2015). This can be seen in contrast with the New Zealand wool industry, where value has been derived through the promotion of farm-level traceability by companies such as Icebreaker (Pawson and Perkins 2013). By contrast, the USA is viewed as an emerging market for British wool, as it currently accounts for only 3% of UK wool exports. Here the essential non-human properties of the wool as a natural, renewable, long-lasting and biodegradable material are being promoted to consumers increasingly concerned about the environmental impact of synthetic and petro-chemical based fibres,[9] as well the labour relations involved in the production of cheap disposable textiles (see International Labour Organization 2013).

With consumers demanding more visibility and transparency in supply chains, a project to develop and market pure Welsh wool of regional provenance has been developed by the Cambrian Mountains rural development initiative in mid-Wales.

Reaffirming the importance of place, Cambrian Mountains Wool is an attempt to re-ground and reorient the stretched and distanced elements of the woollen industry within the rural landscape of mid-Wales (of which Newtown is a part) and to 'rekindle the historic links between local sheep farmers, wool processors, designers, makers and retailers' (Cambrian Mountains Wool 2016). Questions have been raised, however, as to whether the Cambrian Mountains coding is too place-specific to express the symbolic capital necessary for creating a premium market for the product.

Conclusion: assembling uncertainty

At the outset of this article we argued that an assemblage approach could provide analytical insights into the provisional and contingent enrolment of rural commodities and communities into translocal configurations over time. This is because, we would argue, that it is through the *doing* of assemblage that the critical value of the approach is best demonstrated; tracing relations and becomings without an *a priori* micro or macro focus can open up black boxes (Müller 2015) and bring to light previously overlooked objects of analysis and power geometries (Massey 1993). By tracing the global wool assemblage we have therefore sought to provide evidence for this claim in research practice and contribute towards the relational analyses of contemporary rural spaces in the context of globalisation.

Applying an assemblage methodology to the empirical case of Welsh wool production has led us to examine a series of situated and localised processes and interactions between human and non-human, organic and inorganic, technical and natural components, ... *that together make an assemblage work* (Fox and Alldred 2015, p. 407. Emphasis added). These relations have been facilitated by various biological, technological, regulatory and marketing regimes that work to transform wool into a globally mobile commodity. Our research has identified several key moments of translation, such as wool grading, when the material or expressive dimensions of sheep or wool were changed in order to render them knowable and mobile between different sites in the assemblage. We can also recognise efforts to relocate value not simply in the rootedness and authenticity of place (with wool rendered largely placeless in the system of commercial British production), but in the inherent non-humanness of sheep themselves as the source of a natural, sustainable and therefore increasingly desirable commodity. Our analysis draws attention, firstly, to the importance of both mobility and emplacement in local and global assemblages, and, secondly, towards recognising globalisation as a more-than-human phenomenon (see Head *et al*.. 2016).

At the same time, while we have traced the global wool assemblage outwards from Newtown, these relations are not unidirectional and assemblages clearly react back upon their components. The entry of new components into the assemblage (such as new strains of sheep-borne disease) or the withdrawal of others (such as farming subsidies) can introduce new vulnerabilities into global wool supplies. Within the UK, the referendum decision to leave the EU or Brexit, has resonance

across a wide array of sectors, including Welsh sheep farming and wool production.[10] At the time of writing, the emergent nature of the Brexit process means various scenarios currently surround the future of UK agriculture, including the possibility of reduced trade with the EU for agricultural products and reduced public support for agriculture and rural development. These would have particularly severe consequences for the type of low-intensity upland sheep farming that dominates mid-Wales.

With the EU currently Wales' main market for sheep meat exports, the introduction of a new component into this trade assemblage in the form of tariffs on UK agricultural products is likely to render, as Dwyer (2018) notes, 'a significant number of farm businesses in Wales even less financially viable'. She goes on to outline the potential consequences of this for farmers:

> *It would send a clear message to older farmers that they might do best to cut their losses and retire now, and to those younger farmers with borrowings based upon future income projections, it could send them into bankruptcy.* (p. 12)

Barriers to trade could create the possibility that some livestock farmers would diversify into sectors such as horticulture as the UK attempts to meet more of its domestic demand for food production. The BWMB, however, obviously needs a critical mass of sheep farmers in order to support the infrastructure of the wool production assemblage and has therefore been a vocal proponent of the value of upland sheep farming beyond measures of relative productivity alone. The exteriority of its relations to other assemblages, including delivering environmental goods and services, maintaining recreational and tourism landscapes, and sustaining rural communities has instead been highlighted (BWMB 2017).

How farmers make decisions in the context of this uncertainty is, however, a question that points towards the potential limitations of an assemblage approach. As we have sought to demonstrate in this article, assemblage has value as a research methodology for examining *how* certain sets of relations come into being, are maintained and can break apart. However, in order to answer questions such as *why* sheep farmers do what they do and *why* they might choose to continue to do so, despite the economic hardships experienced by many, requires an explanatory framework based in understandings of cultural, familial and institutional contexts as well as behavioural factors linked to identity formation, intuition and affect (see, for example, Wynne-Jones 2013, 2017). Here we would follow Müller (2015) in his assertion that assemblage thinking, while attentive to 'the relations between power, politics and space' could be productively brought into dialogue with other social theories in order to engage further with the socio-material, discursive and affective dimensions of power as it emerges through assemblages, changing and (re)stabilising them in different ways. As Müller (2015, p. 36) writes: 'While assemblages have been regarded as champions of fluidity, that does not mean that everything can change at will or is in flux. Above all, for political geographers, it is important to understand what is fluid, what is fixed, when, where and for what reasons'.

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Notes

[1] Newtown's population increased from 990 in 1801 to 4,550 in 1831 as skilled and unskilled workers migrated from the surrounding rural areas (and further afield) to work in the burgeoning textile industry (Jenkins 2005).

[2] Sir Pryce Pryce-Jones capitalised upon the town's improved distribution systems to establish Britain's first mass mail order company based almost entirely on the sale of Welsh flannel. At its peak in the 1870s and 1880s Pryce-Jones exported goods from his Royal Welsh Warehouse building in Newtown as far afield as America and Australia, and to customers including the German army and members of the British royal family (Jenkins 2005).

[3] The destruction of the largest factory, the Cambrian Mills, in a fire in 1912 effectively marked the end of woollen manufacture as the staple local trade in Newtown. By the early 1950s the last of the remaining small-scale mills dependent on processing wool for local farmers had also ceased operations.

[4] The county of Powys (in which Newtown is situated) is one of the largest agricultural regions in Wales. In 2017, an estimated 9% of the Powys workforce aged 16 to 64 years was employed in agriculture and fishing, compared with 2% across Wales nationally. The sector is characterised by extensive sheep and beef production, with grassland accounting for 74.8% of land area in the county, a high proportion of which is classified as a severely disadvantaged area.

[5] For 2014-2020, Wales receives about £225 million per year from the EU towards direct support payments to Welsh farmers.

[6] As at 2015, over half of the UK's wool clip was exported, with approximately 30% of this exported wool going to China. By comparison, Chinese interests purchased 75% of the Australian wool clip and 25% of the New Zealand wool clip, respectively (BWMB 2015b).

[7] The diversity of pure breed and cross-breeds farmed across different parts of Britain means that 110 different grade numbers are required to categorise the wide variation in the type and quality of wool being produced on upland and lowland farms.

[8] Curtis Wool Direct is a significant actor in international trade, importing wool from New Zealand and all over Europe, in addition to buying around 50% of the annual British wool clip from the Marketing Board. Curtis estimates to sell around one-third of the wool it buys to UK manufacturers, one-third to Europe and one-third to Asia.

[9] Part of this promotion has been carried out through the Campaign for Wool, which is a global initiative involving the major world wool-producing countries.

[10] Uncertainty surrounding Brexit impacted on consumer confidence, with UK carpet manufacturers reporting lower sales in 2016. At the same time, non-human elements of the assemblage played their part too, with the wet winter and spring of that year affecting the colour of the wool, which is slightly more yellow and therefore fetches a lower market price (Bradshaw 2016).

References

Acuto, M. (2013) Global cities, governance and diplomacy – the urban link (London: Routledge)

Acuto, M. and S. Curtis (2014) Assemblage thinking and international relations. Pp. 1–15 in M. Acuto and S. Curtis eds., Reassembling international theory (London: Palgrave)

Amin, A. (2004) Regions unbound: towards a new politics of place. *Geografiska Annaler: Series B, Human Geography* 86 (1) pp. 33–44

Anderson, B. and C. McFarlane (2011) Assemblage and geography. *Area* 43 (2) pp. 124–127

Baker, T. and P. McGuirk (2017) Assemblage thinking as methodology: commitments and practices for critical policy research. *Territory, Politics, Governance* 5 (4) pp. 425–442

Bear, C. (2012) Assembling the sea: materiality, movement and regulatory practices in the Cardigan Bay scallop fishery. *Cultural Geographies* 20 (1) pp. 21–41

Berry, P. (2017) Sheep meat and wool. *Agricultural Commodities* 7 (2) pp. 59–66

Bennett, J. (2005) The agency of assemblages and the North American blackout. *Public Culture* 17 (3) pp. 445–466

Bradshaw, J. (2016) British Wool: a thriving industry, thanks to running the last marketing board in the country. *The Telegraph Online*. Available online at https://www.telegraph.co.uk/business/2016/11/20/british-wool-a-thriving-industry-thanks-to-running-the-last-mark/ Accessed June 13 2018

Brenner, N., D.J. Madden and D. Wachsmuth (2011) Assemblage urbanism and the challenges of critical urban theory. *City* 15 (2) pp. 225–240

BWMB (2014) Newtown grading & producer totals by county, 2013/2014 season. Data provided upon request.

BWMB (2015a) Presentation on British Wool delivered at Wool House. Bradford, 14.04.15.

BWMB (2015b) British wool exports data, 2014/2015 season. Data provided upon request.

BWMB (2017) Press release: what hill sheep do for the UK. Available online at: https://www.britishwool.org.uk/news/what-hill-sheep-do-for-the-uk.php Accessed June 13 2018

Çalişkan, K. (2010) Market threads. How cotton farmers and traders create a global market (Princeton: Princeton University Press)

Callon, M. Y. Millo and F. Muniesa eds (2007). Market devices (The Sociological Review Monographs) (Oxford: Blackwell)

Cambrian Mountains Wool (2016) Available online at: https://cambrianmountainswool.org/ Accessed 14 December 2016

Carolan, M. and S. Stuart (2014) Get real: climate change and all that 'it' entails. *Sociologia Ruralis* 56 (1) pp. 74–95

Challies, E. and W. Murray (2011) The interaction of global value chains and rural livelihoods: the case of smallholder raspberry growers. *Journal of Agrarian Change* 11 (1) pp. 29–59

China Daily Source (2015) Wool textile industry seeks new development. Available online at https://www.chinadaily.com.cn/m/jiangsu/zhangjiagang/2015-05/22/content_20789423.htm Accessed October 10 2017

Cloke, P. and H. Perkins (2005) Cetacean performance and tourism in Kaikoura, New Zealand. *Environment and Planning D* 23 (6) pp. 903–924

Cloke, P. (2006) Conceptualizing rurality. Pp. 18–28 in P. Cloke, T. Marsden and P.H. Mooney eds., Handbook of rural studies (London: Sage)

Coe, N.M., M. Hess, H.W.C. Yeung et al. (2004) 'Globalizing' regional development: a global production networks perspective. *Transactions of the Institute of British Geographers* 29 (4) pp. 468–484

Coe, N.M., P. Dicken and M. Hess (2008) Global production networks: realizing the potential. *Journal of Economic Geography* 8 (3) pp. 271–295

Coe, N.M. and H.W.-C. Yeung (2015) Global production networks: theorizing economic development in an interconnected world (Oxford: Oxford University Press)

Collier, S. and A. Ong (2005)Global assemblages, anthropological problems. Pp. 1–23 in S. Collier and A. Ong eds., Global assemblages: technology, politics and ethics as anthropological problems (Malden: Blackwell)
Cook, I. (2004) Follow the thing: papaya. *Antipode* 36 (4) pp. 642–664
Daviron, B.T. and S. Ponte (2005) The coffee paradox: global markets, commodity trade, and the elusive promise of development (London: Zed Books)
DEFRA (2015) UK Farming Statistics - Livestock Populations. Available at: https://www.gov.uk/government/organisations/department-for-environment-food-rural-affairs/about/statistics
DeLanda, M. (2006) A new philosophy of society (New York: Continuum)
DeLanda, M. (2016) Assemblage theory (Edinburgh: Edinburgh University Press)
Dicken, P.,P.F. Kelly, K. Olds et al. (2001) Chains and networks, territories and scales: towards a relational framework for analysing the global economy. *Global Networks* 1 (1) pp. 89–112
Dittmer, J. (2014) Geopolitical assemblages and complexity. *Progress in Human Geography* 38 (3) pp. 385–401
Dobeson, A. (2016) Scopic valuations: how digital tracking technologies shape economic value. *Economy and Society* 45 pp. 454–478
Dwyer, J. (2018) The implications of brexit for agriculture, rural areas and land use in wales. *Public Policy Institute for Wales*. Available online at: https://www.wcpp.org.uk/wp-content/uploads/2018/04/The-Implications-of-Brexit-for-Agriculture-Rural-Areas-and-Land-Use-in-Wales-1.pdf Accessed June 13 2018
Echánove, F. (2005) Globalization and restructuring in rural Mexico: the case of fruit growers. *Tidjschrift voor Economische en Sociale Geografie* 96 pp. 15–30
Enticott, G. (2001) Calculating nature: the case of badgers, bovine tuberculosis and cattle. *Journal of Rural Studies* 17 (2) pp. 149–164
Farías I. and T. Bender eds (2010) Urban assemblages: how actor-network theory changes urban studies (Abingdon: Routledge)
Fox, N. and P. Alldred (2015) New materialist social inquiry: designs, methods and the research-assemblage. *International Journal of Social Research Methodology* 18 (4) pp. 319–414
Goodwin, M. (2013) Regions, territories and relationality: exploring the regional dimensions of political practice. *Regional Studies* 47 (8) pp. 1181–1190
Head, L., J. Atchison and A. Gates (2012) Ingrained: a human bio-geography of wheat (London: Routledge)
Heley, J. and L. Jones (2012). Relational rurals: some thoughts on relating things and theory in rural studies. *Journal of Rural Studies* 28 (3) pp. 208–217
Hollander, G. (2010) Power is sweet: sugarcane in the global ethanol assemblage. *Journal of Peasant Studies* 37 (4) pp. 699–721
International Labour Organization (2013) Making progress against child labour: global estimates and trends 2000–2012. Available online at: https://www.ilo.org/wcmsp5/groups/public/–-ed_norm/–-ipec/documents/publication/wcms_221513.pdf Accessed June 13 2018
Jenkins, J. (2005) The flannel makers: a brief history of the welsh woollen industry (Conwy: Gwasg Carreg Gwalch)
Jones, M. (2010) Limits to thinking space relationally. *International Journal of Law in Context* 6 (3) pp. 243–255
Jones, O. (2006) Non-human rural studies. Pp. 185–200 in P. Cloke, T. Marsden and P.H. Mooney eds., Handbook of rural studies (London: Sage)
Kelly, P.F. (2013) Production networks, place and development: thinking through global production networks in cavite, Philippines. *Geoforum* 44 (1) pp. 82–92
Latham, A. and D. McCormack (2010) Globalizations big and small: notes on urban studies, actor-network theory and geographical scale. Pp. 53–72 in I. Farías and T. Bender eds., Urban assemblages: how actor-network theory changes urban studies (Abingdon: Routledge)

Li, T. (2007) Practices of assemblage and community forest management. *Economy and Society* 36 (2) pp. 263–293
Li, T. (2014) What is land? Assembling a resource for global investment. *Transactions of the Institute of British Geographers* 39 (4) pp. 589–602
Marcus, G. and E. Saka (2006) Assemblage. *Theory, Culture & Society* 23 (2) pp. 101–106
Marsden, T. (2016) Exploring the rural eco-economy: beyond neoliberalism. *Sociologia Ruralis* 56 (4) pp. 597–615
Massey, D. (1993) Power-geometry and a progressive sense of place. Pp. 59–69 in J. Bird, B. Curtis, T. Putnam, G. Robertson and L. Tuckner eds., Mapping the futures: local cultures, global chance (London: Routledge)
Massey, D. (2005) For space (Sage: London)
McCann, E. and K. Ward (2012) Assembling urbanism: following policies and "studying through" the sites and situations of policy making. *Environment and Planning A* 44 (1) pp. 42–51
McFarlane, C. (2009) Translocal assemblages: space, power and social movements. *Geoforum* 40 (3) pp. 561–567
McFarlane, C. (2011) The city as assemblage: dwelling and urban space. *Environment and Planning D* 29 (4) pp. 649–671
McFarlane, C. (2011) On context. *City* 15 (3–4) pp. 375–388
Moran, W., G. Blunden and A. Bradly (1996) Empowering family farms through cooperatives and producer marketing boards. *Economic Geography* 72 (2) pp. 161–177
Müller, M. (2015) Assemblages and actor-networks: rethinking socio-material power, politics and space. *Geography Compass* 9 (1) pp. 27–41
Murdoch, J. (1997) Inhuman/nonhuman/human: actor-network theory and the prospects for a nondualistic and symmetrical perspective on nature and society. *Environment and Planning D* 15 (6) pp. 731–756
Murdoch, J. (2000) Networks: a new paradigm of rural development? *Journal of Rural Studies* 16 (4) pp. 407–419
Murdoch, J. (2003) Co-constructing the countryside: hybrid networks and the extensive self. Pp. 263–280 in P. Cloke ed., Country visions (London: Pearson)
Murdoch, J. (2006) Networking rurality: emergent complexity in the countryside. Pp. 171–184 in P. Cloke, T. Marsden and P.H. Mooney eds., Handbook of rural studies (London: Sage)
Ouma, S. (2015) Assembling export markets (Oxford: Wiley-Blackwell)
Parker, C. (2009) Tunnel-bypasses and minarets of capitalism: amman as a neoliberal assemblage. *Political Peography* 28 (2) pp. 110–120
Pawson, E. and H. Perkins (2013) Worlds of wool: recreating value off the sheep's back. *New Zealand Geographer* 69 (3) pp. 208–220
Rankin, K. (2008) Manufacturing rural finance in Asia. *Geoforum* 39 (6) pp. 1965–1977
Roche, J. (1995) The international wool trade (Cambridge: Woodhead)
The Scotsman (2015) Soaring demand sees Harris tweed investment. Available online at https://www.scotsman.com/business/food-drink-agriculture/harris-tweed-production-soars-thanks-to-wool-demand-1-3140121 Accessed October 10 2017
Stringer, C. and R. Le Heron eds. (2008) Agri-food commodity chains and globalising networks (Abingdon: Routledge)
Whatmore, S. (2002) Hybrid geographies (London: Sage)
Willet, J. and T. Lang (2017) Peripheralisation: a politics of place, affect, perception and representation. *Sociologia Ruralis*. doi: https://doi.org/10.1111/soru.12161
Wójcik, D. (2007) Geography and the future of stock exchanges: between real and virtual space. *Growth and Change* 38 (2) pp. 200–223
Woods, M. (1998) Researching rural conflicts: hunting, local politics and actor networks. *Journal of Rural Studies* 14 (3) pp. 321–340

Woods, M. (2007) Engaging the global countryside: globalization, hybridity and the reconstitution of rural place. *Progress in Human Geography* 31 (4) pp. 487–507
Woods, M. (2009) Rural geography: blurring boundaries and making connections. *Progress in Human Geography* 33 (6) pp. 849–858
Wynne-Jones, S. (2013) Ecosystem service delivery in wales: evaluating farmers' engagement and willingness to participate. *Journal of Environmental Policy & Planning* 15 (4) pp. 493–511
Wynne-Jones, S. (2017) Understanding farmer co-operation: exploring practices of social relatedness and emergent affects. *Journal of Rural Studies* 53 pp. 259–268

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