An Applied GIS and Mapping Translation of Assemblage Thinking Framework

Anthonia Ijeoma Onyeahialam[*1]

[1] Department of Geography and Earth Sciences, Aberystwyth University, UK

Summary

We use the Assemblage as constituted by DeLanda in fusion with GIS as modelling frameworks to understand how globalisation affects rural spaces. This fusion is made possible through the application of spatial concepts in understanding the way wool from sheep in a rural farm house location finds its way into the supply chain, interacting with other elements of global commodity chain and putting rural locations in a complex system. We present efforts using GIS to explore, unravel, visualise and communicate complexities and connections in wool assemblage as a global commodity interacting through, yet not bounded in rural spaces.

KEYWORDS: Assemblage, GIS, qualitative GIS, globalisation, mapping

1. Introduction

Here we present efforts in using GIS to engage with assemblage ontological framework originally developed by Deleuze and Guattari (1988) and extended by other authors like DeLanda (2006) and Anderson and McFarlane (2011). Assemblage is a framework for analysing social complexity relations, it emphasises fluidity, exchangeability and multiple functionalities and very similar to the actor network theory (ANT), yet differentiated in that the framework emphasises that systems are not static, but always in a state of becoming.

The theoretical framework has recently become fashionable in a wide range of geographical scholarship, in studies on sites and regions (Allen and Cochrane, 2007, McFarlane, 2009) and the social complexities of geopolitics (Cowen and Smith, 2009). Apart from works on surveillance assemblages (Haggerty and Ericson, 2000); multimedia cartography and mapping (Cartwright and Peterson, 2007; Kitchin et al., 2011), there is a paucity of assemblage scholarship using GIS in any form despite Deleuze and Guattari (1988) often reference to maps and mapping in the presentation of assemblage framework - *"it has to do with surveying, mapping, even realms that are yet to come"; "Make a map, not a tracing"*. This is perhaps due to the "Scientific Wars in Geography (Pickles, (1995).

We however attempt move forward this debate, integrating GIS from the point of data collection, to analysis and visualisation in a study combining both qualitative and quantitative data to understand how the globalisation processes happens in and through rural communities trough an assemblage thinking. We apply assemblage as an entry point to understanding globalisation in rural communities in the Global-Rural project with a case study of wool. We draw out the social benefits of GIS while acknowledging the limitation the tool has in tackling the assemblage framework.

[*] aio@aber.ac.uk

2. Assemblage Framework and Globalisation

Assemblages are composed of heterogeneous elements that may be *human* and *non-human*, organic and inorganic, technical and natural"; its parts have m*aterial* and e*xpressive* roles that are dynamic and continually changing; its component parts may be detached and plugged into a different assemblage in which its interactions will become different (DeLanda (2006); Anderson and McFarlane (2011).

DeLanda (2006) most clearly articulates 6 core characteristics of assemblage (Material, Expressive, Territorialization, Deterritorialization, Coding and Decoding) as presented in figure 1. Their meanings been further sub defined in the context of globalization and rural communities. These core characters of assemblage permit the application of spatial concepts and tools – location (geographic positions), distance, neighbourhood and region (place), networks (connections & relationships), scale, overlays, spatial variability, spatial dependence, objects and fields which are the foundations of spatial thinking (Goodchild and Janelle 2004). Deleuze and Guattari (1988) and DeLanda (2006) has also described assemblage as a modelling framework and with GIS also been a modelling tool, we have fused both to examine relationships, associations, breaking down complexity and unravelling connections with the characteristics presented in figure 1 redefined within a spatial framework and translated to have meaning for wool in a multi place based analysis.
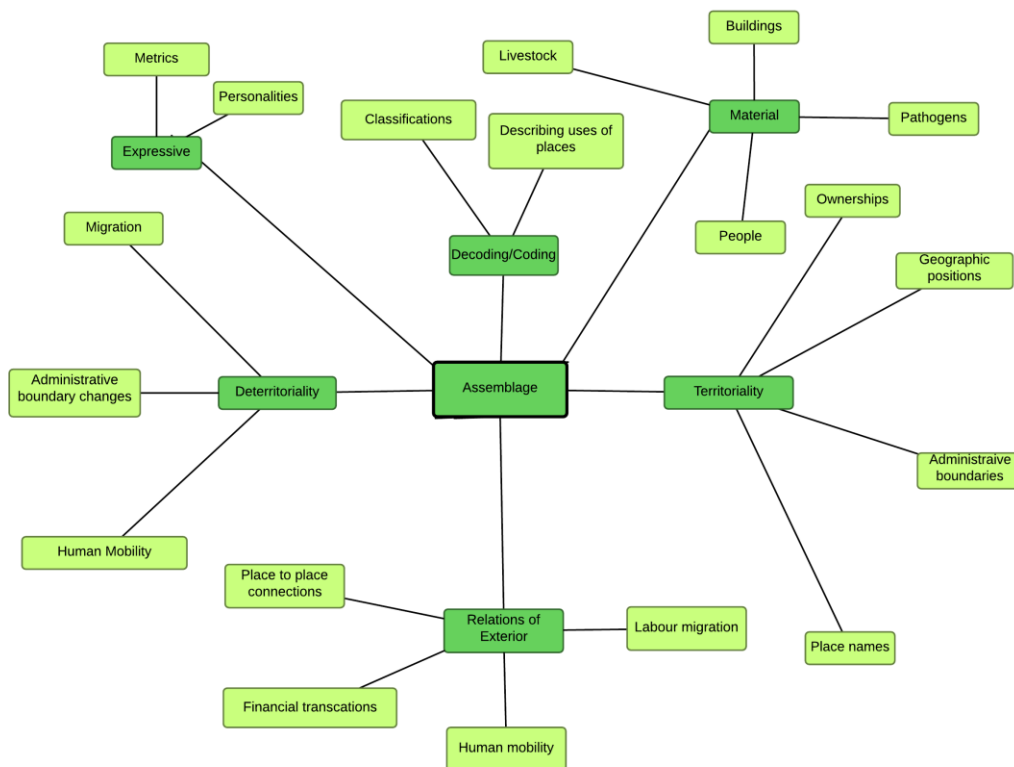

Figure 1: Assemblage Framework

2.1 The Wool Assemblage
In Figure 2 we visually translate these characteristics of assemblage and spatial concepts to what they mean for wool in a place based study in Wales, UK guided by Roche (1995) previous work on international wool trade. We use it to guide data gathering, analysis and visualization.
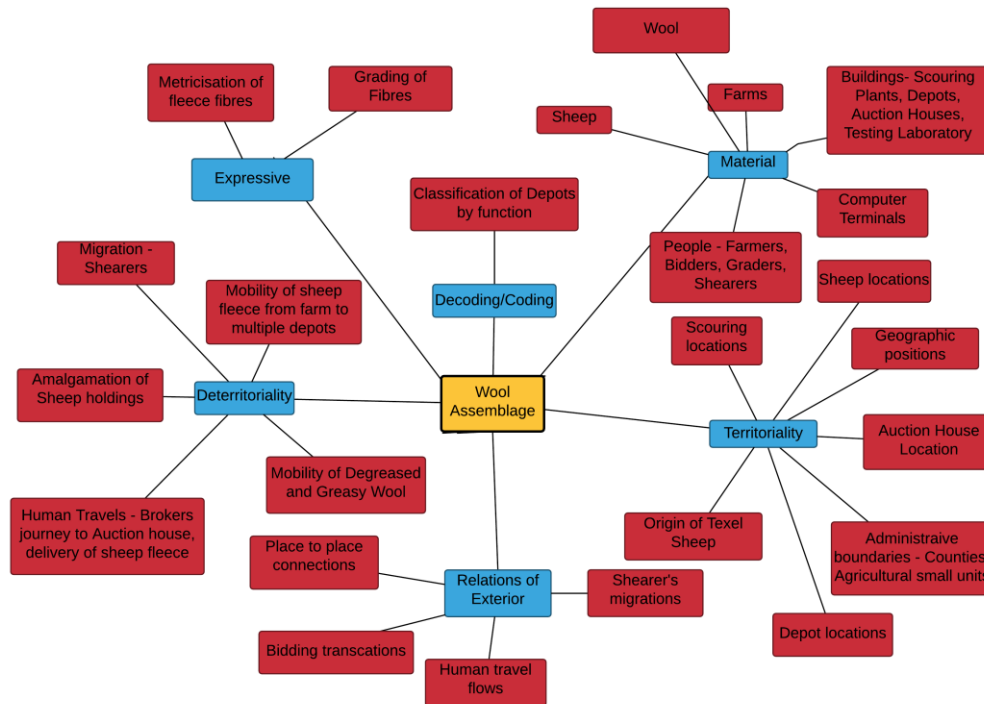
Figure 2: Wool Assemblage

3. Methodology

To gather data that identifies and traces relations and connections within the UK wool industry in the context of assemblage, we employ a mixed methods approach.

3.1 Data Collection

We start with qualitative interviews and field visits to Wool depots, BWMB headquarters in Bradford and a wool scouring and combing facility in Bradford, and interviews with farmers, BWMB staff and commercial wool merchants. We further gather trade and agriculture industry data at both UK and global scale. We also source data on UK wool shearers work travel patterns. These data sets depict the characteristics of the assemblage framework.

3.2 Defining Assemblage Attributes and Populating in a GIS

Based on the spatial concepts of outlined earlier (location, distance, neighbourhood and region, networks, scale, overlays, spatial variability, spatial dependence, objects and fields) (Goodchild and Proctor (1997); Goodchild and Janelle 2004)), we draw meanings from data gathered and translate them into attributes that populate the locations elements identified under decoding, coding, relations of exterior, material, expressive, territoriality, deterritoriality in figure 2. This is stored in a spatial database that allow further interrogation.

3.3 Analysis, Representation and Visualisation

To analyse and visualise exteriors of relation we use distributive flow mapping and network analysis to analyse the geographic positions of origin and destinations of different forms of relations and processes that are either expressive or materials. We then give it meaning using appropriate symbols and cartographic projections. According to Harvey (2015), cartographic representation involves the process of symbolizing geographic representation in order to communicate knowledge as maps do not have meanings of their own. We overlay these generated datasets to visualise a wool assemblage.

4. Visualising Wool Assemblage: A Cartographic Expression of Assemblage

Maps are often unable to handle fluidity as a core character in the framework, and so we attempt to represent this and invisible relations using hatched lines and the human aspects using bold symbols.

Here, we translate territoriality by mapping the geographic position of the material (being sheep, farms, buildings – depots, auction houses, wool), while representing deterritoriality as extension of territories as shearers have to travel to farms to derive wool fleece from sheep. Wool exchanges hands when it moves through depots of different functionalities to be reconfigured and reconstituted in order to put value to it and exchange ownership to eventually find itself in a household. In all these, relations are built, disconnected and remade between places, humans, commodities, money and infrastructure locked to multiple administrative units. The assemblage and connections though happening at multiple scales and across boundaries, does not make one scale less or more important as is reflected in figure 3.
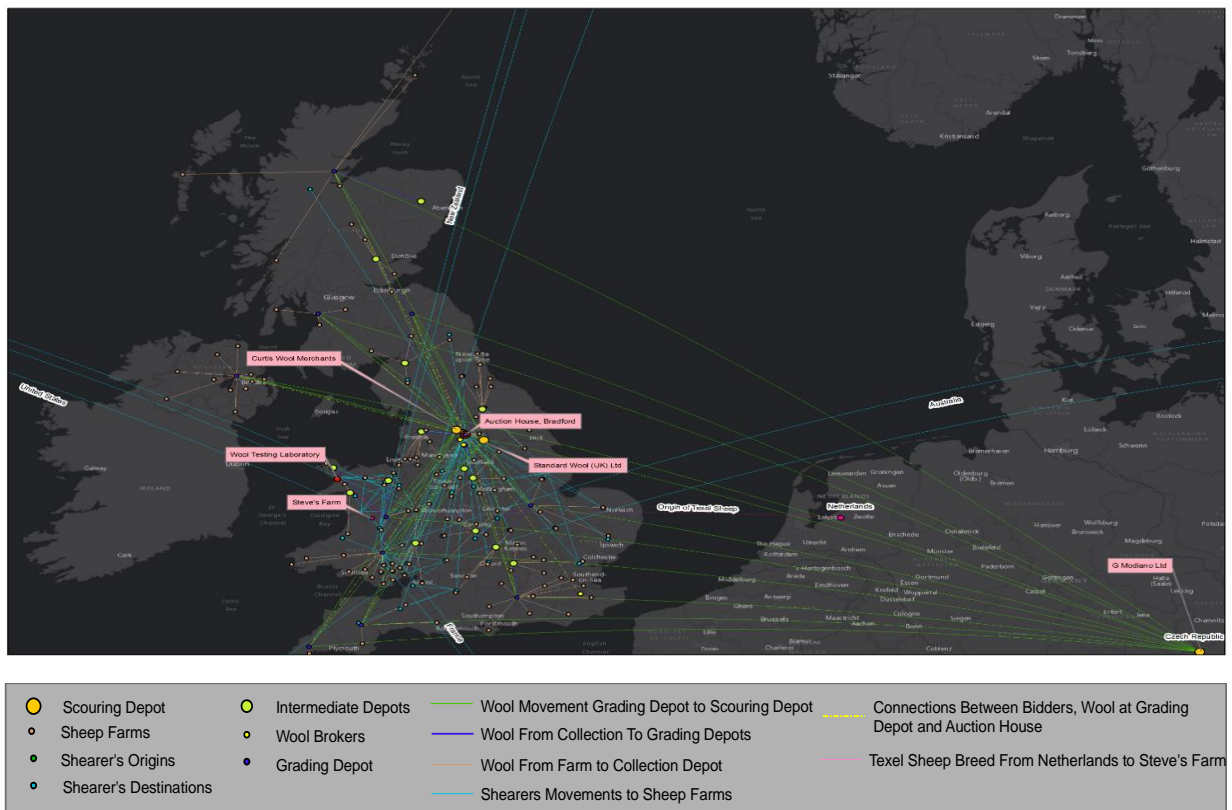

Figure 3: Map of UK Wool Assemblage

5. Conclusion

One character of assemblage that differentiates it from ANT is fluidity, non static, always in a state of becoming. GIS maps are yet to be able to handle this core character in the framework. It is also unable to handle some relations of exterior such as bidding transactions. Despite this, spatial concepts of GIS provides an opportunity to engage beyond of the "Science wars" with both qualitative and quantitative GIS data in understanding social processes like globalization.

6. References

Allen J and Cochrane A (2007). Beyond the territorial fix: regional assemblages, politics and power. *Regional studies*, *41*(9), 1161-1175.

Cartwright W and Peterson M P (2007). Multimedia cartography. In *Multimedia cartography* (pp.1-10). Springer Berlin Heidelberg.

Cowen D and Smith (2009). After geopolitics? From the geopolitical social to geoeconomics. *Antipode*, *41*(1), 22-48.

DeLanda M (2006). *A new philosophy of society: Assemblage theory and social complexity*. A&C Black.

Deleuze G and Guattari F (1988). *A thousand plateaus: Capitalism and schizophrenia*. Bloomsbury Publishing.

Dodge M, Kitchin R and Perkins C (Eds.) (2011). *Rethinking maps: new frontiers in cartographic theory*. Routledge

Goodchild M F and Proctor J (1997). Scale in a digital geographic world. In *Geographical and environmental modelling*.

Goodchild M F and Janelle D.G. eds. (2004). *Spatially integrated social science*. Oxford University Press.

Haggerty K D and Ericson R V (2000). The surveillant assemblage. *The British journal of sociology*, *51*(4), 605-622

Harvey F (2015). *A primer of GIS: Fundamental geographic and cartographic concepts*. Guilford Publications.

McFarlane C. (2009). Translocal assemblages: space, power and social movements. *Geoforum*, *40*(4), 561-567.

Pickles J ed. (1995). *Ground truth: The social implications of geographic information systems*. Guilford Press.

Roche J (1995). *The international wool trade*. Elsevier.

7. Acknowledgements

8. Biography

Anthonia Ijeoma Onyeahialam is PDRA (GIS and Geovisualisation) on the GLOBAL-RURAL project at Aberystwyth University. Her research interests lie in the application of GIS and Geovisualisation to qualitative and quantitative data for the understanding of globalisation and its making and remaking of rural communities.