

EVERYTHING IS RELATED TO EVERYTHING ELSE

This short information graphics film was commissioned by The University of Sheffield for the 2012 Festival of the Mind. The film is a collaboration between Geographers Professor **Danny Dorling** and **Dr Benjamin Hennig** from the University of Sheffield, Sheffield College Geography lecturer **Carl Lee** and **Nick Bax** and **Daniel Fleetwood** of **Humanstudio** in Sheffield.

Danny, Benjamin and Carl have collaborated in the past with projects as diverse as map mash-ups, music videos and short films. Their work tries to engage wider audiences beyond the lecture theatre with some of the key ideas and new techniques in human geography. Issues around inequality, globalisation and sustainability inform all of the work they are engaged with.

New ways of presenting geographic data are at the heart of Benjamin and Danny's international reputation. Danny has led the globally ground-breaking 'Worldmapper' team and Benjamin has just won (July 2012) a major award from The German Korber Foundation for his innovative techniques of spatial data manipulation set out in his recent PhD awarded by The University of Sheffield. All three contribute to the Viewsoftheworld YouTube channel.

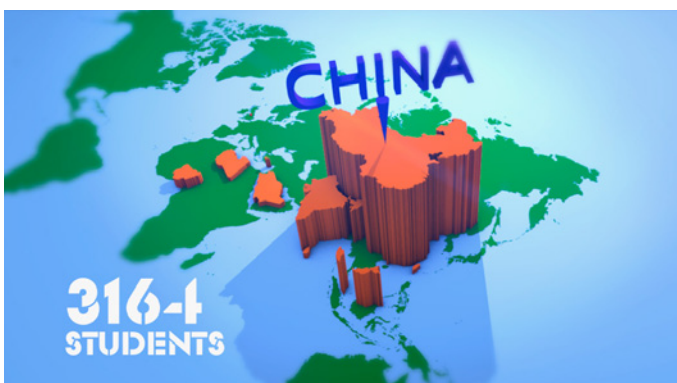
Benjamin's own website goes by the same name and contains a wide range of his innovative mapping.

Humanstudio was founded by ex Designer's Republic graphic artist Nick Bax in Sheffield in 2007. Nick and his team work on an eclectic range of design projects but for this work the focus is on information graphics.

Designer Daniel Fleetwood has been largely responsible for the look of this film. He's the man with the powerful Apple Mac and a keen eye for colour.

The thinking behind this short film is to show that so much of what is studied in geography is part of a complex, evolving complexity. Individual 'facts' can be linked to other information to help build up a wider and better understanding of the world in which we live. Carl starts his new geography students off by suggesting that it is a 'join the dots' subject; all those snippets of information whirling around the world waiting to be connected in some way so a more complete understanding can be developed.

However one of the fundamental principles of geography is that 'Everything is related to everything else (but near things are more related than distant things)'. This is known as Waldo Tobler's first law of geography. It has been thought that globalisation and particularly the internet would lead to the 'death of distance', the 'Flat World' propounded by Thomas Friedman. Such thinking is an outright challenge to Tobler's law.





It is true that the distant can now be near; in Sheffield that is increasingly felt by the rapid growth in non-UK students studying in the city. We can Skype, surf and stumble our way through a more complex world than we ever imagined even a couple decades ago and all from our smart phones where-ever we are.

Perhaps more pertinently economic forces that develop far from Sheffield shape the city's fortunes. Whether that is the Chinese savings that provided a significant amount of the initial capital to fuel the ballooning private debt that has led to Sheffield and the UK mired in economic recession at the present time. Or it may be demand for basic food stuffs from a growing and increasingly wealthy global population that is helping to drive up the price of many staples food in the UK- (<http://www.guardian.co.uk/lifeandstyle/2011/jul/17/food-prices-rise-commodities>).

However it would be foolish to discard Tobler. In a city like Sheffield, for most people, the most important focus of their life is the neighbourhood in which they live. This is a reality that can have profound impacts upon not only their general well-being but their life expectancy.

In Sheffield the difference between the highest life expectancy and the lowest is the same as the gap between Japan (with the World's highest national life expectancy – blip from the tsunami excepted) and Pakistan (a country at an altogether different level of development to Japan). In Sheffield that gap is expressed over just 4 miles from Worrall to Netherthorpe.

For this commission the focus is on the city of Sheffield. However understanding a place today has never been more linked to how that place

is related to the rest of the world. This is at the heart of globalisation. Sheffield was one of the first cities of the industrial revolution which propelled globalisation from colonial plunder to one driven primarily by urban patterns of consumption.

With the University of Sheffield currently ranked at 101 in the global rankings of universities (<http://www.timeshighereducation.co.uk/world-university-rankings/2011-2012/top-400.html>) And a more recent international ranking placing the University as 66th best out of the top 200 worldwide <http://www.guardian.co.uk/higher-education-network/table/2012/sep/11/top-200-qs-world-university-rankings-2012>" the city still has an important global presence beyond its World renowned manufacturing skills.

The success of Sheffield increasingly depends on us all appreciating the connectivity and complexity of the world in which we live even if we rarely venture into the city centre let alone far flung foreign lands.

All the information set out in this project is the responsibility of Danny and Carl and to that end set out below are all the primary sources used.

We would welcome comment and corrections.

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1. "Everything is related to everything else, but near things are more related than distant things." Tobler, W (1970). "A computer movie simulating urban growth in the Detroit region". *Economic Geography*, 46(2): 234-240. This maxim, commonly known as the first law of geography, concerns itself with the idea that the nearer places are to a point the greater the interaction between those two points. Waldo Tobler is Professor Emeritus at the University of California, Santa Barbara Department of Geography.

2. "Distant can now be near." The fundamental challenge to Tobler's first law has come from the technical developments that have under-pinned the expansion of globalisation. Containerisation, more efficient and affordable air travel, electronic communication and 24 hour media have all played a part in shrinking the world we live in. Being on the other side of the world doesn't necessarily mean you are less connected to a place than somewhere that is in much closer proximity. Carl is currently trying to formulate what his other eighteen laws of geography are.

3. International Students in Sheffield. These numbers have been aggregated from 3 separate sources. The University of Sheffield Planning and Governance. Table 1: All students with non-UK domicile by headcount. Sheffield College internal e-mail: mim.wolley@sheffcol.ac.uk International Administrator at Sheffield College. Sheffield Hallam University Strategic Planning and Intelligence non UK student numbers spreadsheet obtained by Ref FOI/12/83. All numbers are for the academic year 2010-11.

4. World Map Based on Population. This map and the evolution from a standard land based Mercator projection to one based upon population density has been produced by Dr Benjamin Hennig a research associate at The University of Sheffield. Benjamin's personal website can be found at <http://www.viewsoftheworld.net/>

5. Overseas students at The University of Sheffield. This data is taken from the external University of Sheffield web page <http://www.shef.ac.uk/sheffield/custom-jsp/instprofiles/profile.jsp?fact=intstud&year=2006&go=Go>

6. Total Sheffield Population 2011. <http://www.ons.gov.uk/ons/rel/mro/news-release/census-result-shows-increase-in-population-of-yorkshire-and-the-humber/censuyorkandhumberrn0712.html> The first press release from The ONS on the 2011 Census. Sheffield showed a 7.7% increase in population over the previous decade from 513,100 to 552,700. This makes Sheffield the 3rd largest local authority in England.

7. Amount international students spend in Sheffield. This figure is based upon a series of assumptions and is open to debate however if anything we believe this figure to be an under-estimate. UKCISA (2010-11) estimates 455,810 International students in HE and FE in the UK in 2010-11 (the year data for Sheffield is drawn from). There were 405,810 non UK nationals studying in HE and 50,000 students studying at FE Colleges. The Department for Business Innovation and Skills (2011) calculated that in 2010-11 the spend of non-UK HE students in the UK was £7,106,000,000 and FE students £967,000,000. That is an average of £17,510 per HE student and £19,340 per FE student. Applying those average to student numbers in Sheffield HE 11181 (total at end of 2011) x £17510 = £195,779,310 FE 168 x £19,340 = £3,249,120 (+25 part-time) Total £199,028,430.

However this is a significant under estimate because overseas fees at University of Sheffield are on average closer to £14,000 per student per annum with £4,000 being an average student rent (<http://www.shef.ac.uk/union/student-advice-centre/housing/housing-financial/rents.htm>) although non UK students are far more likely to rent higher priced private accommodation (see Sheffield Telegraph 30.8.2012). Additionally a minimum of £3000 a year living costs plus a further £500 a year on study costs (internet connection/books etc) are also factored in. Given these figures a more accurate estimate of the average spend of a non UK student in Sheffield over a year is £21,500.

Re-applying this figure for HE students and plus existing FE figure you arrive at an aggregate total of £243,640,120. This figure includes no travel cost but assuming that each student books one journey home a year within the UK this would add (£400 per trip- high because most students are from Asia) another £4.7million however this is most likely to be spent outside the city region. Of course this figure needs to be revised according to the value of bursaries, spend outside of the city region etc. On the other hand the Sheffield figures are for 2010-11 and given that BIS estimates a 4% year on year real growth in the value of non-UK students to the UK economy the figure for 2011-12 would be £252 million for the Sheffield City region. Thus it is not un-reasonable to suggest that the value of foreign students to the Sheffield city region currently has reached a quarter of a billion pounds this year.

Further sources:

- http://www.alphaplusgroup.co.uk/docs/REPORT_-_Education_-_A_Great_British_Export_-_

Final.pdf

- <http://www.bis.gov.uk/assets/biscore/higher-education/docs/e/11-980-estimating-value-of-education-exports.pdf>

- http://www.britishcouncil.org/global_value_-_the_value_of_uk_education_and_training_exports_-_an_update.pdf

- http://www.ippr.org/images/media/files/publication/2012/04/international-students-net-migration_Apr2012_8997.pdf

UK Council for International Student Affairs (UKCISA) (2012) 'How many international students are there in the UK?' <http://ukcisa.org.uk/about/impact.php>

8. Total Sheffield Spend. This is calculated from the latest G.V.A. figure for Sheffield (2009) - £17,510 multiplied by 2011 census figure of

552,700. This is clumsy on a couple of levels. Firstly the figures are 2 years apart. The population in 2009 would have been slightly smaller; 545,000 at standardised growth rates over the previous decade.

However GVA may have grown slightly or maybe not given the depth of the current recession. Either way the £9.677 billion figure is a ball park figure but one that will be very close to the real figure. Intriguingly a graph found in this document <http://www.ons.gov.uk/ons/publications/re-reference-tables.html?edition=tcn%3A77-250308> puts the total GVA for Sheffield in 2009 at £9.578 billion so the £9.677 figure suggests economic growth for the city is approximately 0.5% per annum from 2010-2011.

9. Average Sheffield Property Prices. These come from a data set prepared by Dr Bethan Thomas for use in 'A Tale of Two Cities. The Sheffield Project' Thomas B, Pritchard J, Ballas D, Vickers D and Dorling D (2009) http://www.sasi.group.shef.ac.uk/research/sheffield/a_tale_of_2_cities_sheffield_project_final_report.pdf

10. GCSE results (A* to C as a %) by area in Sheffield. <http://www.sheffield.nhs.uk/healthdata/nhoods0809.php> The data set are for 2008-09 and are calculated by neighbourhood residency rather than school attendance.

11. Percentage of population 16+ smoking in Sheffield by neighbourhood. <http://www.sheffield.nhs.uk/healthdata/nhoods0809.php> Data collected by GPs and allocated by post code to neighbourhood areas.

12. Average life expectancy in Sheffield by neighbourhood. <http://www.sheffield.nhs.uk/healthdata/nhoods0809.php> . Worrall is the highest figure and Netherthorpe the lowest.

