

## **The Knowledge Based Economy and Digital Divisions of Labour**

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*“The new international economy creates a variable geometry of production and consumption, labor and capital, management and information”* (Castells 1989: 348 – in Downey 2008)

Information is the raw material for much of the work that goes on in the contemporary global economy, and there are few people and places that remain entirely disconnected from international and global economic processes (Castells 1996). Information, and ultimately knowledge, is the carrier for the myriad signals needed for such markets to constantly be enacted, performed and understood.

As such, it is important to understand who produces and reproduces, who has access, and who and where are represented by information in our contemporary knowledge economy. This chapter discusses inequalities in traditional knowledge and information geographies, before moving to examine the Internet-era potentials for new and more inclusionary patterns. It concludes that rather than democratizing platforms of knowledge sharing, the Internet seems to be enabling a digital division of labour in which the visibility, voice and power of the North is reinforced rather than diminished.

### **Information geographies**

*“Information is not knowledge, Knowledge is not wisdom, Wisdom is not truth” – Frank Zappa, 1979*

As Frank Zappa points out, it is important to distinguish between information, knowledge, and other signals, representations and understandings. While this chapter is not the right venue for a detailed discussion and problematisation of the differences between such terms, it is important to clarify what is meant by *information* and *knowledge*. *Information* is generally used to refer to codified descriptions that can answer questions such as ‘who,’ ‘what,’ ‘where,’ and ‘why.’ *Knowledge*, in contrast, usually refers to the structuring, process, organizing, or internalization of information.

Traditionally, information and knowledge about the world have been highly geographically constrained. The transmission of information required either the movement of people or media capable of communicating that knowledge. Historical maps offer perhaps the best illustration of the geographic limitations to knowledge transmission. The 13<sup>th</sup> century *Carta Pisana* (the world’s oldest navigational chart), for instance, which was produced somewhere on the Italian

peninsula<sup>1</sup>, depicts relatively accurate information about the Mediterranean, less accurate information about the fringes of Europe (Great Britain is represented as a strange rectangular shape), and no information about any parts of the world that are farther afield.

The example of the *Carta Pisana* starkly illustrates the constraints placed on knowledge by distance. 13<sup>th</sup> century transportation and communication technologies (e.g. ships and books) allowed some of the constraints of distance to be overcome by the map's Italian cartographers. But, in the 13<sup>th</sup> century those technologies were not effective enough to allow detailed knowledge about the Americas, East Asia, and much of the world to be represented on the map.

These highly uneven geographies of information matter. They shape what is known and what can be known, which in turn influences the myriad ways in which knowledge is produced, reproduced, enacted, and re-enacted. Importantly, it is not just artifacts from the Middle Ages that display such uneven patterns. Almost all mediums of information (e.g. book publishing, newspaper publications and patents) in the early twenty-first century are still characterized by huge geographic inequalities: with the Global North producing, consuming and controlling much of the world's codified knowledge, and the Global South largely left out of these processes.

Figure 1 starkly illustrates some of these patterns by visualizing the locations in which academic journals are published. The cartogram uses data from all 9500 journals included in the Web of Knowledge Journal Citation Reports (JCR) database and visualises each country with a box that is sized according to the number of journals published from within it. The shading of each country indicates the average impact factor (a measure of how often articles within a journal are cited) of all journals within that country. The JCR database is an especially crucial metric not only because its owners claim<sup>2</sup> that it offers a "systematic, objective means to critically evaluate the world's leading journals," but also because it forms an important part of the ways that academics, departments, and universities are evaluated (i.e. non-JCR publications are generally considered to be less valuable than those in the JCR database).

The map reveals a staggering amount of inequality in the geography of the production of academic knowledge. The United States and the United Kingdom publish more indexed journals than the rest of the world combined. Western Europe, in particular, Germany and the Netherlands, also scores relatively well. Most of the rest of the world then scarcely shows up in these rankings. One of the starkest contrasts is that Switzerland is represented at more than three times the size of the entire continent of Africa. The Global South is not only under-represented in these rankings, but also ranks poorly on average citation score measures. Despite the large number and diversity of journals in the United States

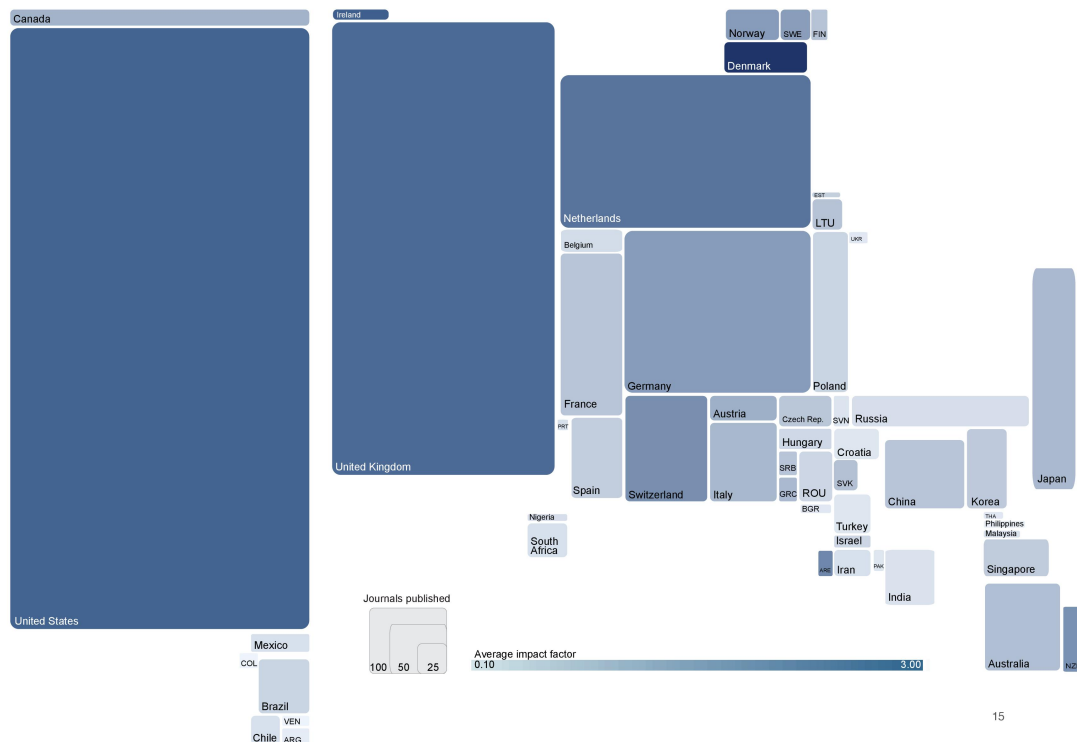
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<sup>1</sup> The precise origins of the map are unclear.

<sup>2</sup> [http://thomsonreuters.com/products\\_services/science/science\\_products/a-z/journal\\_citation\\_reports/](http://thomsonreuters.com/products_services/science/science_products/a-z/journal_citation_reports/)

and United Kingdom, those countries manage to maintain higher average impact scores than almost all other countries

Figure 1: A cartogram of all journals in Thompson Reuters' Web of Knowledge



Source: Graham, M., Hale, S. A. and Stephens, M. (2011) *Geographies of the World's Knowledge*. London, Convoco! Edition.

These geographies of information reveal how knowledge and economic power are closely intertwined, and undoubtedly both reflect and reproduce positionalities of centrality and marginality in the global knowledge economy. Despite the entrenchment of much of the world's codified knowledge in the Global North, many people are pointing to the potential for significant changes in such patterns. The Internet and other information and communications technologies (ICTs) provide and enable possibilities for fundamentally different communications media, methods, platforms and practices. In other words, while movements and control of information were previously constrained by the significant limitations of communication and transportation technologies, such constraints rarely apply in the Internet-age. Movements of information are almost instantaneous and can be transmitted across the world for minimal costs. As such, there are very real potentials for the geographic and temporal frictions that traditionally constrained and limited the movements of information to be overcome.

### The Potentials of ICTs and Reconfigured Information Economies

Access to ICTs is by no longer confined to an elite few. In 2011, there were over five billion mobile phones in use. This means that most people on our planet now have some form of access to telecommunications services, and indeed, most mobile devices are now in use in the Global South. There are also approximately

two billion Internet users around the world. In other words, almost one in three human beings has some form of online access.

Concomitant with this broadening of access to communication technologies has been a fairly widespread belief that now, for the first time in human history, many of the geographic frictions that traditionally contributed to concentrations of information can be overcome. For example, at the 2003 World Summit on the Information Society, Harvard Law Professor Lawrence Lessig asserted<sup>3</sup> that “[f]or the first time in a millennium, we have a technology to equalize the opportunity that people have to access and participate in the construction of knowledge and culture, regardless of their geographic placing.”

The central idea here is that the Internet is able to bring into being an ethereal alternate dimension with two key characteristics. First, a ‘space’ that is infinite and everywhere (because everyone with an Internet connection can enter); and, second, one that is simultaneously fixed in a distinct (albeit non-physical) location that allows all willing participants to arrive into, and interact in, the same virtual space (Graham 2011). It is thus important to closely examine the difference that the Internet has made in bringing about potentially new information geographies.

Unfortunately, what most contemporary mappings of information demonstrate is that the Internet has failed to enable a more distributed geography of codified information creation and use. Figure 2, for instance, maps contributions to Wikipedia: which is one of the world’s largest online platforms of user-generated content. Despite the fact the platform is potentially available and open to most<sup>4</sup> of the two billion people on Earth with an Internet connection, that hundreds of thousands of people have contributed, and that hundreds of thousands of places around the world have been described, we still see an incredibly concentrated geography of codified knowledge. For example, there is more than twice as much content created about France than the entire continent of Africa. It is not just Wikipedia that displays such skewed patterns of online information geographies. Many other platforms, repositories of content, and online databases exhibit similar spatial cores and peripheries of knowledge (Graham and Zook 2011).

While earlier information sources (like the *Carta Pisana*) had more apparent lacunae and absences and local origins, online platforms can be more duplicitous in their appeals to be neutral, objective, and comprehensive. Despite the many ways of understanding Internet geographies (Zook 2007), there remains a widespread assumption that the Internet is a neutral space facilitating many-to-many relationships and allowing access to what Wikipedia’s founder refers to as “the sum of all human knowledge” and Google’s founders describe<sup>5</sup> as their

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<sup>3</sup> <http://www.itu.int/wsis/docs/pc2/visionaries/lessig.pdf>

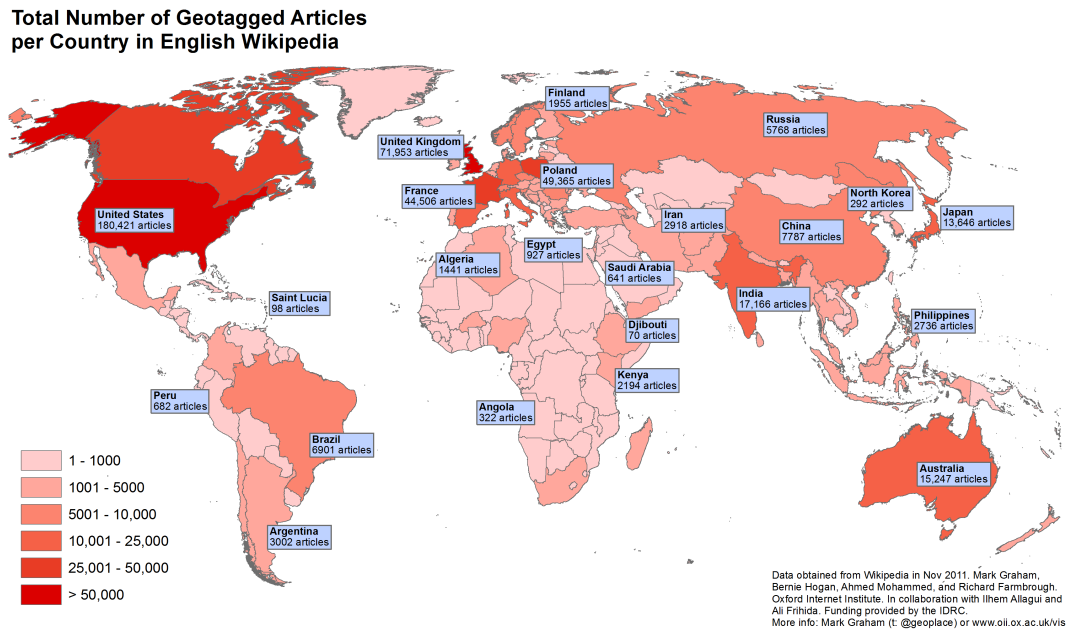
<sup>4</sup> Wikipedia is sporadically censored in some countries: most notably China.

<sup>5</sup>

[http://www.sec.gov/Archives/edgar/data/1288776/000119312504142742/ds1a.htm#toc59330\\_1](http://www.sec.gov/Archives/edgar/data/1288776/000119312504142742/ds1a.htm#toc59330_1)

“unbiased and objective” results. However, the Internet has only enabled amplifications of earlier unequal patterns of information geographies.

Figure 2: Map of all Geotagged Wikipedia Articles in English



Source: Mark Graham ([www.zerogeography.net](http://www.zerogeography.net))

## Digital Informational Divides

The dense clouds of information, or “repositories of experience” (Grabher 2002), about some parts of the world are likely self-reinforcing because of the ways that exchanges of both codified and tacit knowledge are significantly facilitated by spatial proximity (Benner 2003). These initial uneven geographies of information were brought into being by the spatial fixes of physical telecommunication networks, rates of literacy, patterns of access to existing knowledge, capital and other resources necessary to produce and publish, and a range of other social, economic, and political patterns, practices, and processes. And despite the changing ways in which space is produced through spatial fixes, and changing geographies of literacy, knowledge, and access, dense clusters of information persist in many places because of the self-perpetuating nature of knowledge transfer discussed above.

The stickiness of information cores and peripheries, even in an age of supposed friction-free communications, is concerning because of Harley’s (1989) observation that spatial configurations of information both have power and reproduce power. Because of its uneven geographies, the power/knowledge nexus is thus inherently inclusionary and empowering for some people and places and inherently exclusionary and disempowering for others. Knowledge clusters that are reinforced by repeated rounds of spatial fixes thus result in, and reinforce, a landscape of uneven geographic development (Downey 2008). While the earlier ‘New International Division of Labour’ heralded a movement of

production from the Global North to the Global South (Dicken 2010), we now seem to be witnessing a new digital division of labour in which much of the world's knowledge work is produced in the global cores.

Ultimately, despite a rapid growth in education and Internet access for much of the world, most people on our planet are still entirely disconnected from global platforms of knowledge sharing. Even amongst those two billion that are now online, a significant proportion of those that are connected are still left out of global networks, debates and conversations. Digital divisions cannot be simply bridged through connections and open online platforms, and much more work needs to be done to overcome inequalities in visibility, voice and power in an increasingly networked world. In other words, while connectivity is clearly a pre-requisite for participation in 21<sup>st</sup> century platforms of knowledge sharing and participation, connectivity and access are by no means a determinant of knowledge access, creation and sharing.

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