A close reading of Graham et al's "Toward a study of information geographies"

"Information has always had geography. It is from somewhere; about somewhere; it evolves and is transformed somewhere".

This paper by Graham et al explores the geographical influence on information and the augmentation brought about by the digital era. The paper investigates how information is accessed, used, and even explores the contribution of information from different regions across the globe. The idea of geographical information was more apparent before the digital era. The main form of information distribution came from newspapers and books. This brought about limitations in the distribution of information. Furthermore, the technologies associated with collecting, storing, and distributing information were expensive. This meant that information was scarce and geographically rooted. This brought about regional inequalities when it came to information access. Furthermore, the limitations in distribution gave control and political power to the distributors. The paper then analyses the statistics relating to information in the digital era. Internet access and data contribution is still highly geographical. It is seen that there is an imbalance between the global North and global South. This imbalance is discussed in detail and shows that the internet did not bring about total equality as many people claim. The paper concludes with this idea of imbalance and how the digital era is yet to solve the geographic inequalities of the past.

Past Inequalities:

Graham et al analyse how the geographical limitations of information access in the past let to information discrepancies in countries across the globe. Castells (1999,3) emphasises how Africa has been left behind in the digital era. Castells(1999,3) mentions that 'most of Africa is being left in a technological apartheid'. This proves to be true statistically when looking at Figure 1. Figure 1 shows the global variations of internet users by country. It can be seen in this figure that Asia has the largest percentage of internet users (42%). Conversely, we see how more than 20 sub-Saharan African countries have an internet penetration of less than 10% with no significant growth in recent years. The reason for this is that the cost of internet access transcends the average income in these countries. As an absolute value , the cost of the internet is relatively low, however, as a relative value the cost reaches as high as 250% of the average income. The past information geography of these African countries formed the basis for the lack of information access we see today. Figure 2 further illustrates the cost of broadband as a percentage of average income. It can be seen that there are vast differences in percentage-based costs across different countries. The majority of the African continent is in the mid to upper range percentages which makes broadband access very expensive. This reiterates the idea postulated by Castells(1999,3).

Geography of participation :

The article investigates the participation and contribution of information in three main categories:

Domain Name

In order to investigate the amount of content produced on the open Web, Graham et al analyses domain names. The domain name system was created in the 1980s. It was created due to the fact that traditional IP addresses proved to be difficult for people to remember. Domain names require formal registration, and they end in country-coded extensions. Almost every country has its own unique identifier, normally two letters, many of which are the primary extension used in that region. Figure 3 illustrates the distribution of domain names by country. This figure shows that the majority of domains are registered in North America or Europe. This further emphasises the vast amount of content being released by these regions. In contrast, Africa and the Middle East combined only share 2% of domain distribution. Again this is directly proportional to the content being released in these regions. It is fascinating that even though Asia has the largest internet population, they only share 13% of the domain distribution. It can therefore be concluded that a large internet population does not necessarily relate to the number of domain registrations.

GitHub users:

The second element of participation has to do with the world's largest open software repository. Investigating GitHub data will illustrate the number of contributions being made by programmers per region. Programmers use GitHub as a platform for code publication. Figure 4 shows the number of GitHub users or Commits made per country. Once again, North America and Europe have a large percentage of users and contributors. This aligns with the previous figure on registered domains. Another obvious result is that the Middle East and Africa have the lowest number of users and contributors. This makes sense because not only do these regions share the lowest percentage of registered domains, but a large number of people in these regions do not have access to the internet. It can therefore be concluded that the number of GitHub users does indeed relate to the number of registered domains in different countries.

Wikipedia edits:

Wikipedia is the world's largest open encyclopaedia. More than 15% of internet users access Wikipedia on a given day. This statistic elucidates just how popular it is. The statistics found from the dataset used in Figure 5 shows that the United States, Germany, the United Kingdom and France boast the majority of Wikipedia edits. Once again, the Middle East and Africa are at the lower end of the dataset. These results are directly proportional to both the previous discussions on domains and GitHub users. This correlation clearly shows that the participation and contribution on the internet is directly impacted by accessibility and cost involved in different regions.

Geographies of representation:

The next discussion is on the geographies of a series of different digital representations. Companies such as Google play a huge role in this investigation. The Google search engine is the world's most used search engine. Graham et al conducted searches of every country's name using the Google Custom Search API. Doing this gave them an idea of how many pages exist that mention the specific country. It is unsurprising that the United States is mentioned the most. Google's indexing does not necessarily rely on the geographic inequalities seen in accessibility. However, the comparison between accessibility and mentions correlate. This shows the impact that Google has on the representation of each country. Another example is OpenStreetMap (OSM). OSM is the world's largest open-source map. Once again, the United States has the largest amount of content nodes on

OSM. Africa on the other hand has the same amount of content nodes as California alone. This demonstrates the inequality of information when it comes to country representation.

Conclusion:

The results displayed in this paper clearly shows the definite inequality when it comes to the access, participation, and representation of different geographies. The data collected contradicts what most people believe about the internet being the digital equalizer. The discussion on accessibility alone clearly demonstrates the uneven distribution of information in today's society. Furthermore, the participation aspect clearly leans towards the global North. Unsurprisingly, all of these things combined results in the disproportionate representation of countries around the globe. This inequality links back to before the digital era even began. The internet was supposed to be the ultimate tool to equalize previous irregularities in information geographies. The way I see it, it amplified the geographic inequality that we see today.

1) Graham, M., De Sabbata, S. and Zook, M. A. (2015) 'Towards a study of information geographies: (im)mutable augmentations and a mapping of the geographies of information, Geo: Geography and Environment, 2(1), pp. 88–105. doi: 10.1002/geo2.8
2) M. Gilbert. (2010, October). "Theorizing Digital and Urban Inequalities". *Information, Communication & Society.* 13:7, 1000-1018. Available: https://www.tandfonline.com/doi/pdf/10.1080/1369118X.2010.499954?needAccess=true
3) Article19.org. n.d. *Freedom of Expression and Internet Regulation*. [online] Available at: <https://www.article19.org/data/files/pdfs/publications/freedom-of-expression-and-internet-regulation.pdf>