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The World Economic Forum: Deciphering Connections to Find Effect Policy Solutions

As our world becomes more closely integrated than ever before, economic issues increasingly affect global finance and trade, everyday interactions and living standards. Their implications reach policy makers and everyday citizens. As a student interested in these issues, I was led to the World Economic Forum 2014 (#wef14), which encompassed these topics, anchored by a distinctly interactional focus. At first, I was wary of choosing an issue like the World Economic Forum. I was wary of choosing an issue that was transient. However, the topic, proved substantial.

The World Economic Forum (WEF) is a Swiss-based organization that tasks itself with solving important international issues. Since its inception in 1970s, "over 1,000 companies around the world have become members of the WEF and its interests ... cover health, corporate citizenship, and peace-building activities" (Forum 2009). It brings together the world's distinguished figures in the academic, business and political fields of economics. These individuals met in Davos, Switzerland on January 22nd-January 27th.

With a preliminary knowledge of the World Economic Forum, my research focused on three main questions: how is #wef14 used on Twitter, who is using it, and what conclusions can I gather from the tweets I collect?

Before collecting and analyzing my tweets, I was reasonably sure that the majority of my tweets would be informational, argumentative or factual in nature.

Because of the encompassing nature of the forum, I predicted that the scale of my data would be large. My initial predications led me to the Eurozone –the quintessential culmination of economics and the global community. European economic leaders are debating the approach to combat inflation and unemployment still years after instability inflamed by the Greek economic crisis. In the wake of Greece's reinception into the Eurozone, "European businesses [were] forced to write off 360 billion euros ($495.7 billion) of "bad" or unpaid debt" (Cosgrave 2014). Suffering businesses, absent economic booms and "Europe's 26.2 million unemployed" all led me to hypothesize that the Eurozone crisis would be a closely debated issue (Cosgrave 2014).

I also expected topics concerning growth in developing nations, the BRIC nations – Brazil, Russia, India, and China, especially. China, for instance, has experienced enormous increases economic productivity. Many theorists predict that its economic trajectory will surpass the United State's economic growth in the coming years. These shifts in growth and development to rising nations come with consequences. In fact, economist Thierry Geiger maintains that "the shift of production power towards emerging economies [like China] was … implications like negotiation, moral responsibility and leadership on such issues as the climate or global finance" (Economic Times 2014). Furthermore, as these definitions of economic integration and development continue to emerge, I suspected that developing nations and the role they play would be a constant attraction to economists.

In regards to Twitter users that used #wef14, I anticipated users to be confined to mainly intellectuals, economists, policymakers, and government officials. I also expected a certain amount of input from the common person, yet to what extent, I was not entirely

sure. In theory, since decisions that result from this meeting play a role in shaping international policy and relations, shaping policy all the way down to the individual level, ideally every one would be participants in these Twitter conversations. Yet, I was fairly certain that the common person would not be as well represented in the dialogue as they ought to be. My later findings corroborated this hypothesis.

In fact, this assumption regarding representation in the World Economic Forum is not unfounded. It seems that many demographic groups are left out of the global dialogue, especially at conventions like the WEF. Kevin Ahern, assistant professor of religious studies at Manhattan College, confirms this assertion, stating that "participation … is not accessible to civil society groups and is not balanced by regional representation. Only 15% of participants are women" (Ahern 2014). How can one demographic group possibly succeed at understanding, addressing and solving issues faced by so many different groups?

Initiatives have been undertaken to increase representation, however. But numbers of women and minority population at the World Economic Forum remain unsatisfactory. In an attempt to increase these numbers, the WEF mandated a quota system in 2012, demanding its "100 most important partners… [to] send one woman to the annual meeting for every four men" (Martinson and Gani 2014). Yet, in 2014, women accounted for only 15% of the 2,500 delegates. This decrease can be attributed to "companies … who avoided the quota altogether by sending four rather than five delegates" (Martinson and Gani 2014). This fact reveals an unsettling truth: elite global policy makers seem satisfied with status quo representation. Unfortunately, this hard truth seems unlikely to change anytime soon.

This lack of representation leads to a widening disparity in perspective between the "Davos man" and the common person: a disparity between the global elite and hoi polloi. Bruce Nussbaum, Professor of Innovation and Design at Parsons The New School of Design argues that those at the World Economic Forum "[don't understand] the damage done to average people in the West by the Great Recession" (Nussbaum 2011). Ostensibly, this is a growing problem that results in anemic policy, incapable of dealing with the questions that need answers. As Nussbaum asserts, "[at…] Davos… a deal is a deal." Many of the solutions proposed at the annual Forums have "lost credibility and support among the middle class and poor in the U.S. and… Europe" (Nussbaum 2011). Ahern, reiterating these concerns, asks the tough question: "[how] can a meeting of mostly rich, white, powerful, older men address … inequality in a complex world?" (Ahern 2014).

To answer some of these questions and decipher the relationships, conversations, and networks surrounding this controversial forum, I collected a vast dataset of tweets using ScraperWiki. This program helped me collected all tweets sent using #wef14 in the specified time period, starting on January 22nd, 2014 and ending February 17th, 2014. Data scraping is the process of gathering data from one point to another; in my case, from Twitter to a Microsoft Excel file. After the process of scraping was complete, ScraperWiki accumulated a total of 43,059 tweets. Due to a error, where one scraping period ended and another failed to start when the previous left off, a total of 14 days worth of data was missing, from January 23rd to February 4th. Luckily, due to the size of the dataset, this gap mattered little, though could have still provided me with a larger pool of data to analyze.

I then used descriptive statistics to analyze my dataset. After plotting a line graph of my data on Microsoft Excel and R to analyze the amount of tweets sent over time, I concluded that my data was skewed right. This meant that there was a greater amount of tweets sent in the earlier stages of data collection than in the later stages. A peak in my data corresponded to the starting of the conference. As described above, the range of data was 43,059 tweets, spanning over 27 days.

I used Microsoft Excel and Wordle to perform textual analysis on my data set. To assess the languages used to send tweets containing #wef14, I examined the Microsoft Excel document that ScraperWiki used. In the document, the "lang" column indicates the language used in each tweet. There were 25 languages represented in my dataset, the vast majority of tweets were in English (38,520, 89.69%). The second most represented language was Spanish (2,238, 5.21%) and German, de, was the third most represented language (990, 2.31%).
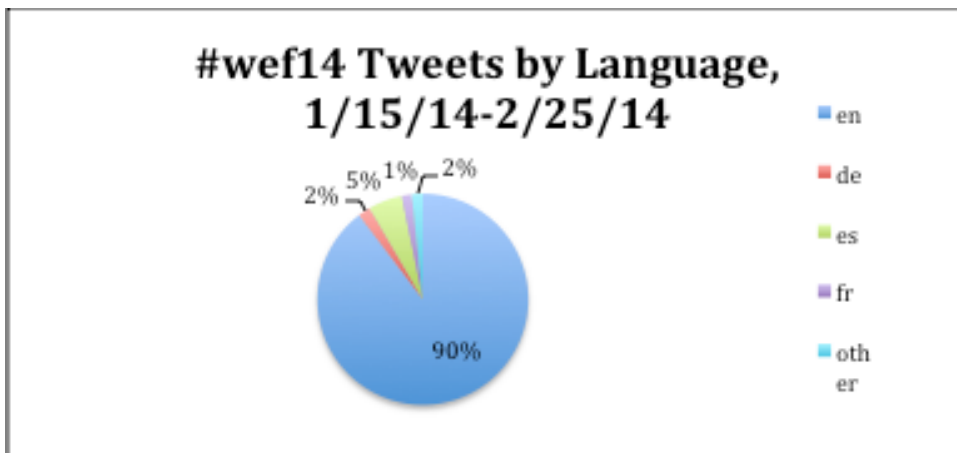

Figure 1. #wef Tweets by Language, 1/15/14-2/25/14. (Source: Piccirillo, 2014).

Wordle, a program that produces "word clouds" from text, generated a useful map from which I could deduce the most common significant words used in my dataset. Larger words indicate a higher frequency of use. Davos was the most used word followed by words like "wealth," "women," "CEO," "growth Africa," "equality," and "digital context."

Figure 2. Wordle #wef14 "World Cloud." (Source: Piccirillo, 2014).

To spatially visualize my dataset, I used BatchGeo, a program that creates maps based on a given dataset. For the purpose of this project, BatchGeo mapped each tweet that sent that included georeferenced information. This information details the location where the tweet was sent. Since, on average, around 1% of Twitter users turn on their geolocation, only 339 tweets, or .88%, could be mapped. Understandably, this severely limited the spatial analysis I could perform on my data.

Figure 3. Map of Georeferenced Tweets That Used #wef14. (Source: Piccirillo, 2014).

Finally, Gephi provided a compact and well-designed network analysis. Due to the size of my dataset, I choose 2,500 tweets between the period of January 20th-21st.   I found that there was a large amount of activity on Twitter during this period, roughly corresponding to the convening of the Forum. In the network itself, each node represented a twitter handle. The average path length, indicating how closely connected a network is, was 2.92. The diameter, indicating the maximum distance between any two nodes in a network, was 10. The number of shortest path lengths, indicating the number of paths of length one, was 9,542.

Figure 4. Close View of Gephi Network Analysis. (Source: Piccirillo, 2014).

After conducting these forms of analysis, my findings began to answer the questions I had: how is #wef used on Twitter, and who is using it? As described above, Figure 2 provides textual analysis of the most commonly used words in tweets using #wef14, providing a sense of how #wef14 is used. On a basic level, I found that #wef14 was used mainly for common purposes — to predict, to analyze, to conclude and to review.

Phrases like "digital context," "equality," "growth Africa" and "green-politics," were frequently connected with #wef14. These phrases are considered academic "buzz-words." These types of words have the potential to signify different things to different groups of people due to their ambiguity or nebulous definitions. This is especially true for the World Economic Forum, where a word like "equality" almost certainly connotes a different definition to different groups of people. When dealing with real world issues,

policies riddled with nebulous concepts signify weak answers to global problems.

Absent from these words were various topics I initially predicted would be well represented. These topics included the Eurozone, developing nations and, perhaps most importantly, increasing minority and women representation to the WEF. These words, to a large extent, were not represented in the Wordle text visualization. I can be reasonably sure that these topics were less commonly associated with #wef14. However, "news aggregator sites…come with their own…assumptions—for example, assuming that frequency equals importance" (Crawford 2013). So, one must be wary of correlating the number of times these topics were used or repeated to their prevalence or importance.

My findings also provided me with a greater sense of the individuals tweeting about the World Economic Forum. Figure 3 provides a visualization of all tweets sent that attached a location, mapping each tweet by the coordinates it was sent from. Almost 90% of my dataset was in English. These tweets came from a plethora of English speaking countries, including South Africa, United States, Australia, Canada, United Kingdom, Nigeria, and Kenya. Yet, there still are many locations where tweets were sent from that do not speak English. Spanish was the second highest percentage at around 5%, which is not represented well here, as there seems to only be one data point.

Industrialized, wealthy nations comprised the majority of countries from where tweets were sent. Since these nations are not exempt from economic problems, they also have a vested interest in conferences like the World Economic Forum that attempt to solve global issues. Even the United States suffers from economic inequality, poverty and, in some areas, a low quality of living. Figures 5 and 6, maps created using Social Explorer, both delineate one way in which these economic problems affect citizens all
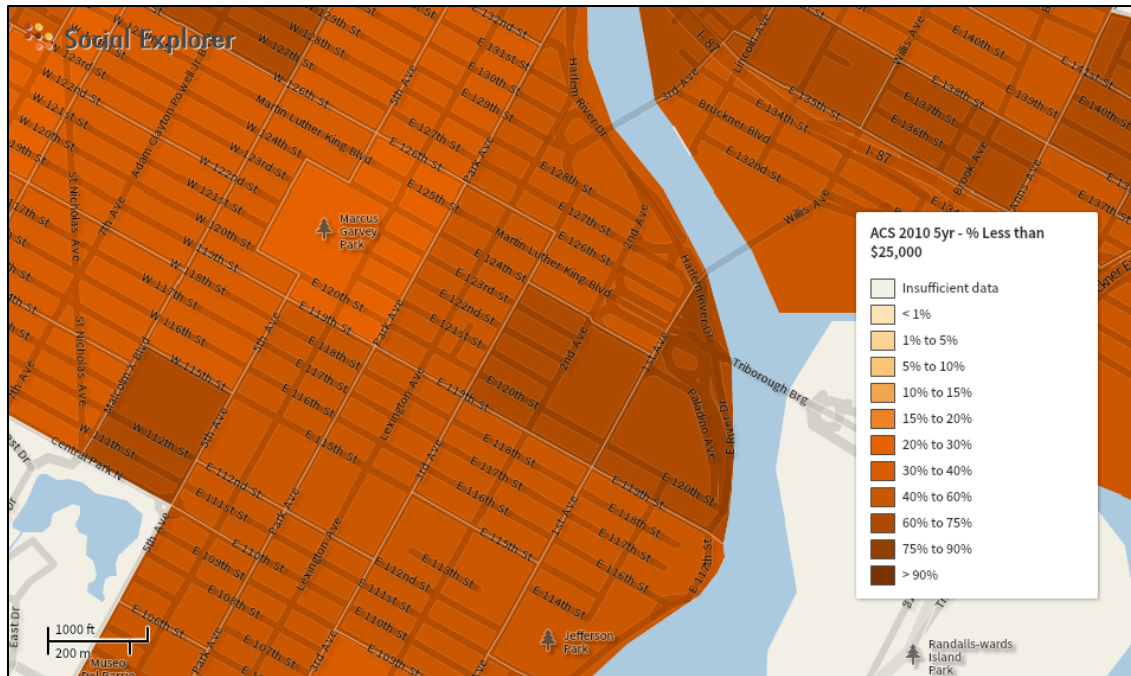
over the world, even those in prosperous nations like the United States. Figure 5 is a map

of Upper Manhattan in 1970. A Twitter user who retweeted, "Just unbelievable: 85

richest people as wealthy as half of the world's population," attached #wef14 to this tweet

and sent it from the corner of Martin Luther King Blvd and Lexington Avenue in East

Harlem, New York. In 1970, the average family income for nearly every census tract in

Figure 5 is below $10,000. Because an income of $10,000/year was the poverty line

around 1980, most residents of East Harlem were well below the poverty line.

Additionally, with the exception of the Upper East Side and Midtown, most residents of

Manhattan made around $10,000-$15,000 a year. Figure 6 portrays an East Harlem forty

years later, yet the results are much the same: around 60-75% of residents were under the

poverty line. In fact, in some census tracts pictured, almost 90% of residents made less

than $25,000 a year.

Figure 5. Income Level in Upper Manhattan in 1970. (Source: Piccirillo, 2014).

Figure 6. Income Level in Upper Manhattan in 2010. (Source: Piccirillo, 2014)

Over time, it is evident that Upper Manhattan, East Harlem specifically, has seen sustained, widespread poverty. In the last thirty years, the percentage of residents under the poverty line stayed consistently above or at 60%. However, it seems the extreme poverty plaguing Upper Manhattan is isolated. Much of Manhattan has seen enormous growth. While I cannot know for sure whether the tweeter's income statistics are concurrent with the area he is tweeting from, his retweet brings up valid concerns. Indeed, Manhattan is a prime example of the growing income inequality that America has seen over the years.

This inequality is increasing on a global scale as well. Figure 7, a bar graph, represents the range of Gini coefficients from six countries in six world regions. While I was not able to produce a stacked bar graph that graphed income inequality over the years, this plot graphs inequality in countries using the most recent World Bank census data. These six countries include three countries with the highest coefficient and three

with the lowest in each region. A Gini coefficient of 0 represents perfect equality, and a coefficient of 100 implies perfect inequality. African countries not only have the most inequality but also the greatest range of income inequality. However, many prosperous, nations have a large amount of inequality, necessitating action.
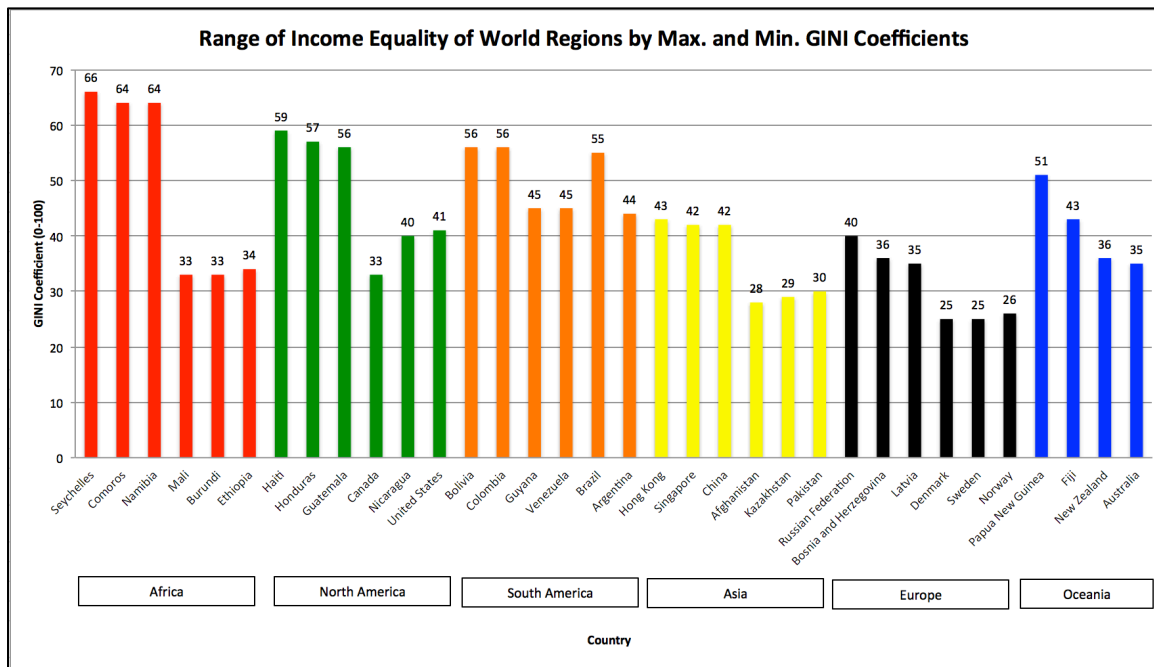

Figure 7. Range of Income Equality of World Regions by Max. and Min. Gini Coefficients. (Source: Piccirillo, 2014).

From these graphs, I examined my dataset on a more individual level and tried to further ascertain exactly who used #wef14. My data visualization, Figure 4, was fascinating. It showed me who was re-tweeting what, and who was interacting with whom. I included singletons, retweets and tweets in the visualizations.

Not surprisingly, almost everyone who was tweeting somehow found his or her way back to "davos." Present in the network is a collar of nodes connected to "davos," and many nodes linked to that collar. Thus, people who retweeted a tweet pertaining to the Forum,

or interacted with a user tweeting about the Forum most likely interacted with another user linked with "davos."

Computing betweenness centrality of certain nodes allowed me to find which nodes were most active in the network. As Jennifer Golbeck describes, betweeness centrality "captures how important a node is in the flow of information from one part of the network to another" (Golbeck 2013, 30). The node with the highest betweeness centrality was "davos" – quite unsurprising, considering the tight network of nodes connected to this "davos" in Figure 4. A twitter handle named "lyssaslounge" held the second highest betweeness centrality. After looking at her twitter page, I realized that she was the CEO of SPIEGAL online, which is a widely read German newspaper. She tweeted a large volume of tweets around the time of my data collection, primarily about gender issues and the gender gap. The third highest betweeness centrality was a node named "amonck" who was the managing director of the World Economic Forum and also tweeted a high volume of tweets about it. These high betweeness centralities indicates close affiliation with the #wef14 network.

The Gephi network provided an excellent way to visualize the complex and intricate web of interactions. One thing that can be added in the future is a timeframe for these interactions. A "clear sense of pacing and moving through time" would help "make [my] work more engaging" (Odewahn 2010, 141). This would allow the viewer to see when each interaction took place – each node created. Since the interactions in the network are important now and certainly in the future, it would be beneficial to track how interactions are made, sustained and change through time.

This network must be looked at with a critical eye, however. The network shows interactions among those who used #wef14, but it is important to remember that those tweeting are not necessarily representative of everyone, especially the average American. Indeed, because of the nature of the hashtag, it would be surprising to find anyone *but* an intellectual tweeting about the World Economic Forum. Kate Crawford and danah boyd write that "Twitter does not represent 'all people', and it is an error to assume 'people' and 'Twitter users' are synonymous: they are a particular sub-set" (boyd and Crawford). Farida Vis corroborates this idea, asserting that Twitter users and the general U.S. population are far from synonymous. In fact, "users are significantly overrepresented in the more densely populated areas…predominantly male… and they [represent] a highly non-random sample of the overall distribution of race and ethnicity" (Vis 2013).

While in certain contexts, these assertions are correct, it does not hold nearly as strongly in this context. I found that on the whole, the population knowledgeable about the World Economic Forum and Twitter users tweeting #wef14 were close to identical. Because of the large intellectual, academic contingency that using #wef14, the gap between the 'people' and 'Twitter users' that Crawford and boyd refer to is small, if not nonexistent. In this way, I could be almost certain that those who were tweeting about the World Economic Forum came from an intellectual background.

Aggregated together, these visualizations are thought provoking. The Gephi network analysis is the strongest and most compelling visualizations technique. The vast majority of tweeters in this network are scholars and intellectuals knowledgeable about the forum. Naturally, this is not surprising. Yet, how many people tweeted about the

World Economic Forum who are not conventional scholars? Just like we cannot eailsy know if the Twitter user from East Harlem was an intellectual who happened to be in the area or an East Harlem resident, investigating Twitter handles alone becomes a heavy task. However, this visualization confirms that where there is a conversation about the World Economic Forum, it is a complex and intricate one. People *are* talking about it, though are they the right people?

Figure 2, the Wordle visualization, was also a compelling tool that allowed me to see which topics were–or were not covered. There was a relatively large disconnection between topics I hypothesized would be important and those actually discussed. Where were "Eurozone," "Greece," or "China" in the list of most frequently used words? While topics such as green energy and African growth are certainty important, I was shocked to find other topics almost completely left out of the conversation.

As previously discussed, the vast majority of Twitter users came from an academic background, as the investigation of nodes with high betweeness centrality indicated. Users came from a shared background, insulating the overall network from average users and common people. These academics tweeted about issues relevant to the Forum, as the Wordle "word cloud" displayed. However, many of the words they used were nebulous or malleable. Finally, it is clear that income inequality and poverty are still widely experienced by individuals and nations alike.

The individuals tweeting signify a small portion of our world, a portion that clearly does not mirror the average citizen. Those individuals tweet about issues shared by almost every individual and nation, yet choose to use ambiguous language or "buzz-words." Finally, those individuals interact and discuss a conference where minority and

women representation is virtually non-existent. A reoccurring theme in my dataset, then, becomes one of misrepresentation. There was misrepresentation of those who tweeted, topics discussed, and finally misrepresentation in those who attended the Forum.

This issues poses significant problems. As Martinson and Gani discuss, the lack of people from ethnic backgrounds and women at conventions like the World Economic Forum is harrowing. Given that many global issues concern women and minorities, a lack of inclusion for these populations is unacceptable. As Figures 5 and 6 described convincingly, poverty is widespread, unrelenting, and unremitting. While the Figures could not provide a direct correlation, often income inequality hits hardest in areas like East Harlem where large minority populations exist. This may be more than just coincidence alone. Yet, it takes real restructuring of deep-rooted institutions to quell certain policy issues like income inequality. Increasing representation in policy making and global forums should become a priority, changing 'one-size-fits-all' policies to more specific and tailored policies.

Additionally, the world is increasingly becoming more interconnected which requires closer interaction with nations and individuals. Yet, when those interactions are not capitalized on by the average citizen, and are taken into the hands of intellectuals and policy makers alone, these problems will not be solved efficiently. The first step is to increase knowledge. More people need to know about significant global issues. Spreading information about conventions like the World Economic Forum is one way to achieve this. As seen in the network analysis, when the conversation happens, it is robust. The communication exists, but the depth of involvement does not. Increasing these conversations to the average person is crucial.

To conclude, conversations and interactions like ones delineated in Figure 4 need to be taken solely from the hands of a select few; away from the hands of the "Davos man" and into the hands of the common person. Kevin Ahern's call to action rings true: "Real change, lifesaving change, will only come if we join together in social movements" (Ahern 2014). Those social movements can and should translate to more diverse and complex interactions on social media. After all, one of Twitter's greatest virtues is its "ability to function as the proverbial global town square" (Vis 2). Hopefully through expanded knowledge, increasing interaction, and a bustling social media "town-squares," policy solutions will fully engage with and alleviate global issues.

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