An Analysis of Ecology in Social Media

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1 Introduction

Throughout the semester we explored a plethora of perspectives and religions pertaining to ecology and our human presence on planet earth. Each stance, from deep ecology, to biocentric equality, to Hebrew environmentalism, to the writings of Muir and Thoreau, had its admirable attributes and values as well as its own unique drawbacks. Ecology, even religion and ecology, is no longer just an academic foray into the human relationship with our planet. We have, in the past century, more dramatically in the past 15 years, abused the resources of our planet so immensely that the sustainable existence of humanity and all other forms of life is now at risk.

Furthermore we face future issues such as population growth and the increasing effects of global warming. For nearly every topic covered this semester, a concept that remained important in the class discussions was the scalability and effectiveness of both the religious ideas and policies we were reviewing and how they could be incorporated into a global-ecosystem that is already in grave danger of failing.

For many of us, this class may have rewired the way we think about our existence on Earth. We may take new initiatives such as becoming a vegan, supporting environmental movements, and perhaps most significantly feeling responsible for a small part of the planet we all share as our home. But just the fact that it takes an entire semester of readings and class time for us to *perhaps* change our perspective illustrates the magnitude of the task at hand. It would be naive to expect the possibility of convincing a large portion of the population to follow some type of green religion or philosophy in the way a missionary tries to pioneer his or her religion in a foreign place. How then, can we apply what we learned and more importantly how can we make it scale?

Simply put, within the cultural texture of past and sadly current generations, there has been a great lack of environmental awareness. What 'lack of awareness' entails is the harsh reality that the majority of the citizens in the United States–one of if not the most powerful and more informed countries in the world–either does not know about the threat of climate change, does not understand the threat of climate change, or does not believe that the threat of climate change is legitimate. However easy it is to target the uninformed members of our population in this story, very few if any of the scientists, politicians, or entrepreneurs who stress the importance of environmental awareness with such a passion today dealt with the issue preemptively.

That water is far from under the bridge and has trickled into the ocean by now. Instead of this destructive cycle of blame and disappointment typical of politics today, we need to ask how can we increase awareness of the importance of ecology–our planet,

our air, our water, our plants and animals, and our fellow humans. When one has a fundamental grasp on the importance of and connection between all of these parts it is easy to understand the predicament we are in.

So often in life, we disagree with ideas not for their content but merely because of the way the content is framed and moreover who it is framed by. For example, when a friend mentioned to me last week that the Boston Celtics were old and would need to get very lucky to win a title. I, an avid Celtics fan, vehemently disagreed pleading my case despite the simple fact that mathematically, aesthetically, and spiritually, the Celtics are in reality an ancient team by NBA standards. The same principle applies to so much of our perception of our world. A news agency covers a story. We see whether or not the story is framed in a way we like by a party we like and then we parse the story into an understanding that is a distortion of the original truth.

That is why one cannot simply go out and preach an idea like dark-green religion, biocentric equality, veganism, or a philosophy based around a basic respect for our environment. Our society now is so constrained by common thought and belonging that original ideas, while valid, are often flung aside because of the ease of just drifting with the flow of the status quo. The easiest way to be liked, accepted, and thought of as reasonable young-adult in this society is to be average and to lean with the 'majority'. However, the adjective *easiest* is not equivalent or even close to the preferred adjective, *best*.

Our generation is so compartmentalized by our vast exposure to the media that our individual identity means very little anymore. It is a sad reality that superficial but often accepted portrait of who someone is today often basically boils down to their social, political, and religious affiliation. This phenomenon partially occurs because advertisers and the media brand what it means to belong to those groups. Everything including the topic of climate change and environmental policies is branded heavily. Thus it becomes extremely difficult to shift these cultural definitions of what something is or belongs to. So how do we spread ideas in this boxed environment? Is there an avenue for change?

2 Social Media as a Cultural Influence

Social Media has become the voice of our culture. In only the last decade or so social media has transformed from a circle of nerdy programmers to perhaps the most influential force in our country and a very powerful force world wide. Nearly every business, politician, news outlet, sports team, many adults, and nearly everyone under the age of 30 with Internet access is a member of at least one social media site. Furthermore even if an individual does not belong to one of these networks, trends on social media are now covered on and are part of the news so unless one does not have access to any type of news coverage, he or she will be exposed to trends of social media.

Social media emerges in the context of this conversation about environmental awareness and individual constraint because social media can raise awareness. Moreover, on a social network–especially a network such as Twitter, there is almost no individual constraint. You can be who you want to be, anonymously if you choose, and share your ideas with thousands, even millions of others.

Butterfly–the documentary about Julia Butterfly Hill–whose story made national news and had a dramatic effect in saving thousands of acres of California forest from devastating logging.[3] I was struck

by not just by the spiritual power of her tree-sit but also by what made her action successful. She stood up for something she believed in and she dedicated her life to her cause. Many, many individuals, however, can claim the same life-long dedication to a cause with no result. Julia's success was a product of her national audience. She was noticed by the media and that allowed her to accomplish her goal. Now imagine if social media existed during her tree-sit, Julia's voice could have potentially reached so many more people.[3]

2.1 Twitter

Twitter is a social networking site that allows users to post 140 character messages. Other members of the site that are following you can see everything you post and can repost it on their own feed. Naturally you can see the posts of everyone you chose to follow. Influential individuals such a politicians, celebrities, and athletes all turn to Twitter to express themselves. Organizations such as companies, nonprofits, and specialty groups all spread their message via Twitter. These individuals and companies focus on shaping their image and enforcing their brand. But there are over 140 million Twitter users and 340 million tweets are sent each day.[7]

2.2 Expanse of Connectivity

The most important aspect of Twitter is that it is a network and your connections are your friends but your connections grow exponentially as the number of users you connect with increases. One user can potentially reach millions of users with a single tweet; if one of those users likes what you said or has a response and tweets about the same thing, a whole new group of users (the second user's connections) are reached, and if they share the tweet, even more connections are formed.

Twitter allows ideas to spread like wildfire. Due to this massive amount of data, which is accessible to developers and programmers, research of topics on Twitter has become a valid topic in computer science.

2.3 Twitter in the Context of Religion and Ecology

I have focused my project on examining 'Religion and Ecology' in the scope of Twitter. As mentioned previously, ecological awareness is a cornerstone of current efforts to protect our planet and bring about a sea change in our societies perception of and relationship with the environment. If we connect these two pieces, the result is the possibility of Twitter as a tool to bring about environmental awareness.

3 Experimental Set Up

3.1 Data Collection

The code for this project is written in a language called python. I used a library called Pattern 2.3 [4] that provides both a keyword-search interface and a database to store the data. With the data stored, it had to be analyzed and then stored again. The code totaled 490 lines and was separated into two programs, one to collect and store the data and one to analyze it.

To search for the data I looked back through our readings and class notes and wrote down words I thought were central to the topics we discussed. I also did some research as to the most important current environmental issues drawn from both current news and several news archives and databases.[2]

The keyword list has 46 words, mostly relating to ecology but some relating to ecology in a religious context for the religions we covered in class. That full list of words words can be seen in Table 1. For approximately 10 days (April 25-May 3) I designed the program to search Twitter for each of these keywords every minute and stored all of those tweets on a server.

3.2 Analysis of Data

Once the tweets for each keyword were stored, the data set was ready to be analyzed. The first piece of information we can draw from the data set is how many tweets each keyword received over the 10 days. The volume of tweets for a keyword is indicative of its popularity and its relevance in the Twitter-Sphere. To calculated the distribution of keywords, a simple data structure containing a keyword and all of its tweet objects can be created and then we just need to know the length of that object to figure out how many tweets associated to each category.

A more complicated technique known commonly as *sentiment analysis* takes a text of any length and goes through it word by word.[5] For each word it compares it to a list of thousands of sentiment words each with a weight and accumulates those values and returns an overall score for the text. This procedure was run on each tweet collected. Thus we can evaluate the sentiment of higher level abstractions such as the key word itself. The sentiment score tells us whether or not the tweet is positive or negative. If it is above 0 it is positive. If it is below 0 it is negative.[6]

4 Results

4.1 Definitions

The following definitions assist in understanding the methodology of attaining and interpreting the results.
(1) **tweet**: A 140 character string of text shared by an individual on Twitter.
keyword-frequency: the number of tweets found for each keyword over the search period.
(2) **sentiment**: the positive/negative polarity of a tweet. Positive adjectives and phrases are awarded positive sentiment. Negative adjectives and phrases are awarded negative sentiment. Their sum results in an overall sentiment score for a text.
(3)**accumulated sentiment**: The sum of the sentiment scores for each tweet collected pertaining to a certain keyword.
(4)**average sentiment**: the accumulated sentiment for a keyword divided by the number of tweets found for that keyword.

4.2 Frequency

Over the course of ten days, the program gathered 457,006 tweets–nearly 2,000 tweets an hour. A frequency analysis of the dataset, as previously described, resulted in the ranking list shown Table 1, and the pie chart shown in Figure 1.

4.3 Sentiment

Sentiment was categorized into two ranking systems. (1) Total accumulated sentiment (the summation of the sentiment scores for each tweet in a category.) (2) Average Sentiment Per tweet (The total accumulated sentiment of a keyword divided by the number of tweets mapped to that keyword). Table 2 and Table 3 show the results of this sentiment analysis.

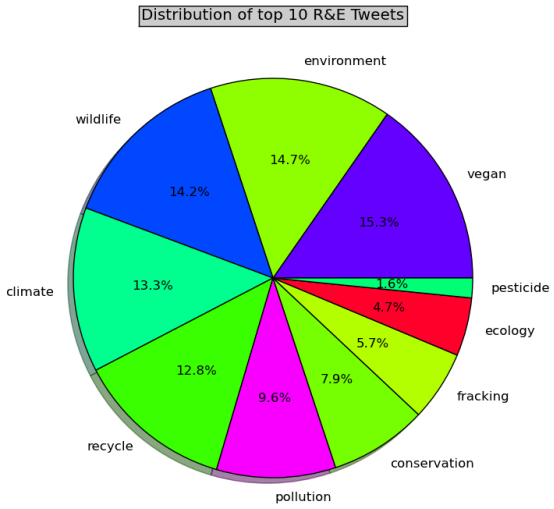

Figure 1: Distribution of Tweets in the data set

In addition to these summary statistics about the sentiment of a keyword, we can look at the specific tweets within a keyword to see what is being said and to ensure the system is working. Table 4 and Table 5 show 3-4 tweets from each of the following keywords: Endangered Species, Solar Energy, Recycle, National Parks, Native American Environment and Pollution.

4.4 Average Sentiment

As described previously, Table 1 shows the total number of tweets each keyword received, Table 2 shows the accumulated sentiment for that keyword, and Table 3 shows the average sentiment per tweet in a category. Table 3 is perhaps the best indicator of the influence of these keywords in twitter as it normalizes the sentiment of the keyword. More specifically this algorithm does not give preference to the

Rank	Keyword	Number Tweets
0	use up	45207
1	vegan	42467
2	throw away	42170
3	environment	40901
4	wildlife	39483
5	climate	36993
6	recycle	35484
7	global warming	30931
8	pollution	26745
9	conservation	21970
10	solar energy	18657
11	fracking	15765
12	ecology	13072
13	endangered species	7846
14	nuclear energy	5148
15	carbon monoxide	4557
16	pesticide	4431
17	rain forest	4417
18	pollute	3667
19	animal welfare	2984
20	acid rain	2277
21	greenhouse gas	2003
22	ozone layer	1781
23	nuclear waste	1297
24	green issues	970
25	fertilizers	934
26	vegetarian	890
27	pressure group	840
28	nuclear fallout	592
29	oil-slick	459
30	exhaust fumes	392
31	animism	322
32	natural parks	302
33	environmental ethics	289
34	protected animal	137
35	protest fracking	128
36	green-scare	116
37	eco-terrorism	107
38	non-renewable resources	71
39	tree-sitting	61
40	biocentric	59
41	buddhism environment	27
42	native american environment	23
43	environmental group	22
44	hebrew environment	9
45	non-violent environment	2
46	ecocentric Ethics	1

Table 1: Shows the *number of Tweets*collected for each keyword, ranked first to last.

Rank	Keyword	Total Sentiment
0	vegan	4872.87886369
1	environment	3554.85534252
2	recycle	3143.52643608
3	wildlife	2847.1052805
4	use up	2515.77439137
5	climate	1843.23192205
6	conservation	1776.89784308
7	throw away	1720.13664922
8	solar energy	1714.70042414
9	pollution	1235.12293301
10	fracking	661.200535487
11	ecology	606.417939283
12	global warming	602.189064109
13	endangered species	509.28346386
14	rain forest	276.646563691
15	pollute	211.599175315
16	nuclear energy	203.753225221
17	greenhouse gas	153.47430987
18	animal welfare	153.27095689
19	pesticide	145.217737078
20	fertilizers	105.618975561
21	ozone layer	93.431097028
22	pressure group	89.2433862434
23	carbon monoxide	46.5926427369
24	natural parks	44.7451444805
25	vegetarian	33.2579785492
26	nuclear waste	27.123747595
27	animism	21.4709794372
28	green-scare	16.1185551948
29	environmental ethics	14.6701418951
30	acid rain	11.5089430939
31	nuclear fallout	9.18904220779
32	exhaust fumes	8.45906325156
33	biocentric	5.45584415584
34	non-renewable resources	5.38968253968
35	tree-sitting	4.7859968735
36	protected animal	4.2568452381
37	environmental group	2.33571428571
38	eco-terrorism	1.48842592593
39	protest fracking	1.13638257576
40	native american environment	0.968091630592
41	hebrew environment	0.9
42	buddhism environment	0.0166666666667
43	ecocentric ethics	-0.214285714286
44	non-violent environment	-0.7
45	green issues	-32.9708085849
46	oil-slick	-65.4403657407

Table 2: Shows the total *sentiment* of each keyword, ranked first to last

keyword with the most number of tweets.

An avid reader may note that the percentages of the slices in the pie chart do not add up to a total of 100 percent. This is intentional as having too many microscopic slices makes rendering the image nearly impossible. The pie chart can be read in conjunction with Table 1. The pie chart powerfully demonstrates how six keywords represent almost eighty-percent of all the tweets.

4.5 Balance of Sentiment

The balance of Sentiment lays heavily on the positive side of the spectrum. If we look at either the average sentiment or the total sentiment, *42/46* keywords were positive. That is a staggering *91 %*. Unfortunately we do not have a control set to compare this balance of sentiment to but a brief survey of general tweets shows that while the majority of tweets fall into the positive sentiment category, the overall sentiment of Twitter would not reach 91 percent positive.

5 Keyword-Tweet Mappings

5.1 Accessing the Data of Individual Tweets

Looking at these tables filled with numbers, one might think: “Well this is great but what exactly is going on? How do we know that these numbers mean anything? Is there anything we can gather from this data other then the fact that a lot of people tweet about being vegan?”. Table 4 shows the potential of this type of system in revealing components essential to positive influence in Twitter.

The table shows 3-4 tweets from five different keywords that were chosen to represent a balanced portion of the ecological spectrum. These are the tweets with the highest sentiment scores from their respective categories. Even this table, while just a minute

Rank	Keyword	Average Sentiment
0	natural parks	0.148162730068
1	green-scare	0.138953062024
2	vegan	0.114745069435
3	fertilizers	0.113082414948
4	pressure group	0.10624212648
5	environmental group	0.106168831169
6	hebrew environment	0.1
7	biocentric	0.0924719348448
8	solar energy	0.0919065457544
9	recycle	0.0885899683261
10	environment	0.0869136535175
11	conservation	0.080878372466
12	tree-sitting	0.0784589651393
13	greenhouse gas	0.0766222216028
14	non-renewable resources	0.0759110216857
15	wildlife	0.0721096492288
16	animism	0.0666800603641
17	endangered species	0.0649099495106
18	rain forest	0.062632230856
19	pollute	0.0577036202115
20	use up	0.0556501070935
21	ozone layer	0.0524599084941
22	animal welfare	0.0513642616925
23	environmental ethics	0.0507617366614
24	climate	0.0498265056105
25	ecology	0.0463906012303
26	pollution	0.0461814519726
27	native american environment	0.0420909404605
28	fracking	0.0419410425301
29	throw away	0.0407905299792
30	nuclear energy	0.0395791035784
31	vegetarian	0.0373685152239
32	pesticide	0.0327731295594
33	protected animal	0.0310718630518
34	exhaust fumes	0.0215792429887
35	nuclear waste	0.0209126812606
36	global warming	0.0194687874336
37	nuclear fallout	0.0155220307564
38	eco-terrorism	0.0139105226722
39	carbon monoxide	0.0102244113972
40	protest fracking	0.00887798887311
41	acid rain	0.00505443262799
42	buddhism environment	0.000617283950617
43	green issues	-0.0339905243144
44	oil-slick	-0.142571602921
45	ecocentric ethics	-0.214285714286
46	non-violent environment	-0.35

Table 3: This table shows the *average sentiment* per tweet for each keyword

sample of the entire dataset, becomes a powerful tool for analysis.

5.2 Promotional Content of Tweets

It becomes evident from looking at this small sample of individual tweets that some of the content pertains to promotion of certain events, places, or products. This is fitting as one of the focus's of this research is how branding and advertisement dominate our capability to form and believe in thoughts that are not considered 'mainstream'.

On the other hand, the vast majority of these tweets illustrate environmental awareness in some way or form. This should be exciting for us to see as it demonstrates that the environmental movement has begun on Twitter already.

6 Discussion

6.1 Distribution Tweets

When looking at the number of tweets each keyword generated over 10 days, it is important to remember that in some ambiguous cases, we cannot delineate whether or not the word is used in an environmental context or not. There are two examples of this in the dataset, specifically the most frequent keyword, "use up", can apply to many categories, not just using up our planet. The keyword "throw away" additionally does not necessarily pertain to throwing away trash.

Aside from those outliers, the top keywords–all with over ten thousand tweets recorded–*vegan, environment, wildlife, climate, recycle, global warming, pollution, conservation, solar energy, fracking, ecology* (see Table 1) are core contemporary environmental issues. It is encouraging to see so much content pertaining to these issues. Regardless of their sentiment, which will be addressed shortly, just

Keyword	Rank	Tweet	Sentiment
Endangered Species	0	am not really sure how to feel about this. On one point they feel the need to save a dwindling species but... http://t.co/eEURpbpF	1.0
Endangered Species	1	@PaulbernalUK .....and if he did and are we really OK with that? Aren't they on an endangered species list?	1.0
Endangered Species	2	@RukaiAlenimu @Vorcupine Well and we don't want an endangered species to get a rep for being delicious now do we? :O	1.0
Endangered Species	3	@mrcraig that is an impressive feat and i'll grant and but don't we frown upon slayers of endangered species nowadays?	1.0
Solar Energy	4	Impressive! Thx for sharing @chriskellytine! Villanova engineering students bringing solar energy to a tribe in Panama http://t.co/oGWosyBV	1.0
Solar Energy	5	Award-winning UNSW research says solar thermal energy storage might be our best option ...on the moon http://t.co/kxBLdFUx	1.0
Solar Energy	6	India Solar Program Driving Solar Prices to Impressive Lows - Link: http://t.co/3xqMYU5r	1.0
Recycle	7	"REUSE REDUCE RECYCLE" Selamat Hari Bumi Pelajar Indonesia GoGreen best	1.0
Recycle	8	@faRAWRsu is so awesome because she didnt miss the recycle bin	1.0
Recycle	9	RT @GreenAdvantage: Heineken holding a contest for ideas on reduce re-use recycle http://t.co/RGhOIwkE. Best entry wins 10K. http://t.co/5riKR9PO openinnova	1.0
Recycle	10	Reuse/Recycle all your containers. It's awesome (Photo Primitive Pond Homestead) :... http://t.co/65wGYVej	1.0

Table 4: This table shows a selection of *individual Tweets and their sentiment scores* from a sample of keywords.

Keyword	Rank	Tweet	Sent
Natural Parks	11	beautiful Providence Canyon State Outdoor Recreation Area — Georgia State Parks http://t.co/G4jay5y2 groundchat	0.92
Natural Parks	12	Happy Earth Day! http://t.co/9AkyfPNq http://t.co/9JIRtgJb	0.8
Natural Parks	13	State Parks And Natural Areas Celebrate Earth Day: Earth Day is a wonderful time to reacquaint yourself with the... http://t.co/pXDsI4tq	0.55
Native American Env	14	The Native American concern for the environment is awesome! Even got my 6-yr-old gettign upset at people who litter. It's a start. gc2012	0.5
Native American Env	5	Happy Earth Day! Be kind to the environment..."The frog does not drink up the pond in which he lives." Native American Proverb.	0.44
Native American Env	16	Tribes celebrate new treaty fishing access site - Tulsa Native American Times: Tribes celebrate new treaty fishi... http://t.co/Uri6AVSo	0.1
Native American Env	17	[General] Native American communities look to tap into renewable energy with federal seed money. http://t.co/UDhTHmJj via Washington Post.	0.025
Pollution	18	GOD made a wonderful creation and we are trashing it. We need to take care of it. Pollution also effects weather. We can control it. EarthDay	1.0
Pollution	19	Excellent piece on air-quality Air pollution and premature deaths and the cheating Mayor http://t.co/ATKUeWR6 via @Green Jenny Jones	1.0
Pollution	20	Studying IPC and Air pollution studies awesome	1.0

Table 5: Shows a selection of *individual Tweets and their sentiment scores.*

the presence of a conversation about these issues on Twitter is a huge step towards increasing environmental awareness.

6.2 Evidence of Branding

The most significant of the top keywords is arguably **vegan**–the second most tweeted subject. This keyword differs from the rest of the top categories in the sense that it is an example of a *fad* that can begin as a small concept and explode into a significant cultural movement. Veganism–and similarly vegetarianism–has become increasingly popular in the past handful of years. According to a 2008 study, just 3.2 percent of Americans are vegetarian and of those just .5 percent are vegans.[8] Of this 3.2 percent, however, approximately half follow their diet for environmental reasons. Perhaps more promising is that the study reports that over five percent of non-vegetarians are interested in a vegetarian-based diet in the future.[8]

This is not a conversation about the merits of becoming a vegan, however. The significance of the vegan keyword is that it represents exactly what we are looking for in spreading awareness via social media. The fact that there are as many tweets pertaining to Veganism as *endangered species, nuclear energy, carbon monoxide, pesticide, rain forest, pollute,acid rain and green house gasses* combined should demonstrate how incredibly powerful social movements can become in social media.

6.3 Emergence on Social Networks

There is no massive organization fronting the vegan movement. It is neither a political, nor economic priority and thus is ignored by much of our corporate and political culture. Despite this, it still is arguably the most popular topic in ecology in social media. We can interpret this staggering fact by realizing that this is a paradigmatic example of a social network, in this case Twitter, creating an *emergent trend*.

Emergence can be defined as the way sophisticated systems and distinct patterns arise from a large quantity of simple components[1]. In this case, a very small subset of people from around the world have joined together on Twitter and transformed the vegan movement from sparse collection of individuals pursuing a belief to a powerful collection of individuals, each expressing their own thought, but with a common goal in mind.

Critics might argue that veganism is not an environmental movement, but rather a fad type of lifestyle that people whimsically pursue as a health choice. This conversation, however, is not about the merits of veganism as an ecological movement, it is about how a social network can be the catalyst that sparks of any type of movement. In the past we have in many ways been stymied by corporations and the media. With a few exceptions, ideas need capital and attention (investors and media) to succeed. But that has all changed with social media. A movement such as veganism has roots much deeper and is much bigger then its prevalence on Twitter. Despite this, its surge on Twitter is a perfect example of how individuals from around the country and world can rapidly come together and emerge into a whole that is much more powerful then the sum of the individual parts.

A whole new topic of research has begun in recent years–the analysis of the dynamics of social media. It is possible for a single tweet by the right person to make Twitter–as news agencies often proclaim–'explode'. Yet for every trending topic there are millions of tweets that have their 40 seconds of glory and then spend the rest of time stored away in Twitter's data center, never to be passed around the world. I believe that this element of entropy, however, is what keeps social networks alive and further more what makes them powerful. If they could be con-

trolled, then they would no longer be a tool that can spark environmental awareness in its truest form; a movement that comes from the people and is driven by the people; a movement that centers around equal members believing in a common cause.

6.4 Sentiment Indicative of Attitude

The overall sentiment a keyword accumulates can be thought of as a comparison between how many positive and negative adjectives were mapped to its content.

The sentiment analysis performed on the data was relatively simple. All it shows is how "positive" or "negative" a particular tweet is. Tables 4 and 5 demonstrate how this analysis is effective. The summary statistics of the sentiment analysis are much more informative, however. Firstly we can notice that the rankings of aggregated sentiment in Table 2 differs from the rankings of tweet-frequency from Table 1. If sentiment were consistent across all categories, we would expect identical lists (as the only changing variable would be the number of tweets)

If we examine Table 2 with this framework, we can find some interesting patterns.The most interesting of these could be the dramatic drop of ranking for real, not theoretical environmental disasters and threats.

Oil slick, ranked 29th in frequency, ranks 46th (dead last) in total sentiment, a drop of 17 places. **Acid rain**, ranked 20th in frequency drops 10 places to become ranked 30th in total sentiment. In addition nuclear waste, carbon monoxide, exhaust fumes, nuclear waste, and pesticides, all dip in the rankings by 3 spots or more between Table 1 and 2.

The discrepancy between this set of keywords rank in the keyword distribution table and the total-sentiment table is striking. It cannot be just a coincidence that nearly every keyword that dropped in ranking represents a real ecological disaster or threat. This trend tells us we react most negatively to what *we* determine to be a real threat. By real I am not suggesting that the rest of the keywords are not real, merely that they do not represent a direct threat in the same fashion.

For example the health of the ozone layer is essential to human sustainability on earth. An oil-slick–a horrific natural disaster with unrepairable repercussions on the ecosystem effected– will not end human life on this planet–the deterioration of the ozone layer could. Yet if we showed an alien the data from Twitter, he or she would think that an oil-slick was the equivalent of a nuclear disaster. This stark contrast demonstrates one of the fundamental concerns raised within our class discussions.

The non-immediacy of the ecological crisis makes it extremely hard to raise an appropriate level of concern. Only when the issue is visible, in plain sight and indisputably evident, do we react. We are affected by what we consider important and relevant to us. Thus we have been able to hide behind a curtain of smug neglect for several decades as our policies and cultural values gnaw away at what is left of a healthy planet. Without framing "climate change" as a *direct threat to us now*, little hope remains of inspiring a sea-change in the way Western culture treats the Earth.

7 Final Thoughts

In Religion and Ecology, we have spent a semester both redefining our relationship with and knowledge of the planet, but also asking how we can make a difference. It is not merely a question of whether or not we can make a difference, we also asked if we can make that difference on a larger scale. An analysis of Religion and Ecology in the context of Twitter shows us that there is a candle of hope burning in the monstrously big and dark cave that is climate change.

There are countless reasons why we can place the blame for our societies current attitude towards the planet. The evaluation of ecology in the Twitter-Sphere highlights one of them darker than the others though. A fundamental reason that so many of us either actively, or more commonly, passively resist the significance of protecting our environment is that from a selfish perspective, it does not *really* matter to us immediately. It is engrained in our culture and also in our biology to react and adapt to cause-effect relationships. The level of causality we attribute to our actions and their effect on our global ecosystem is minimal when considered in isolation.

When we chose to throw away a recyclable can rather than drive to the supermarket to recycle it or drive a SUV instead of a smaller hybrid, I like to believe it is not out of malice for our planet. It is because we don't and cannot see the result of that choice and the result will not effect us in a quantifiable way. It might not even effect our children in a noticeable way. But one thing is certain, many times every day billions of people are making these choices with the misconception that it does not really matter. These choices have been made for the past several decades and continue to be made. We no longer have the excuse of innocence. We can describe our current predicament with climate change as an *emergent event*. An event in which billions, perhaps even trillions of individual actions and decisions have emerged into an ecological disaster.

Some argue that this ecological disaster does not in fact exist and others argue that we cannot do anything to stop it. There will not be a single religion or philosophy that millions of people will adapt. Instead I suggest that increasing environmental awareness is perhaps our best hope for instilling an ember of change in todays society. Instead of preaching an idea or way of life, spreading environmental awareness, if done properly, would allow each and everyone of us to define our relationship with the environment in the context of our own lives and act accordingly.

Social media has–for better or worse–become a prominent voice in our culture. It is new space where hundreds of millions of people have equal right *and* equal ability to express their beliefs. Unlike so many of our cultural standards, the content and nature of social media is flowing and dynamic–it is constantly growing and constantly changing to adapt to the issues of the world in real time. Most importantly it is a free space for expression in a society where some freedoms, such as this quintessential freedom of individual expression, is hard to find. On Twitter, ideas are not filtered by other individuals,corporations, or governments. Most importantly, social networks, Twitter in particular, are places where ideas can and do spread like wildfire and can emerge into social initiatives from nothing in just hours. Social networks may very well be the stage that some of the paramount issues of our generation, including environmental awareness is are finally brought into wide recognition and acted upon. It could just take one tweet.

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