Syntax & Semantics Analysis of Utopia

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Contents

Description of Aim

This Report contains analysis of The Utopia of Thomas More using Nature Language Processing (NLP) techniques. Utilizing artificial intelligence is useful not only in the field of computers but also in the field of linguists. By way of example, artificial intelligence practices can provide a better understanding of classics by examining them differently than a linguist examines. This project aims to provide improved understanding of the Utopia using artificial intelligence techniques that have recently become popular. In this course we interpret the Utopia in our point of view, with our feelings, this project shows the computers' understanding, and feelings from human language specifically what it understand from Utopia. In addition, after computer examines the text and gives the results it understands, i seek to answer, what causes can be behind the results and how can we interpret them.

Indication of Course Project

To begin with, NLP analysis of Utopia is divided into 2 sections (Syntactic, and Semantic Analysis). Thereafter, entire text is divided into groups, words belonging to different groups is examined separately (e.g. content, noun, adj, adv, pronoun etc.). As description of Utopia starts at the second book, this project only examines the second book of The Utopia. The reason of is that, Hythloday in first book describes his own memories, yet in the second one he focuses on the Utopia, and Utopia is presented at different sections (their travel, their slaves, their cities, their learning, their military affairs and so on). Even these sections give us clues in terms of syntax analysis. Furthermore, I separate text according to different sections which is based on headers in Utopia (e.g. *their wealth* is one section and *their slaves* is another section and so on) to compare and contrast them.

Syntactic Analysis

In this section frequencies of words, frequencies of content words is visualized and explained. More, by using syntactic analysis filters, filtering out pronouns, adjectives, nouns, adverbs, etc, so that images of the most common of them appeared and explained.
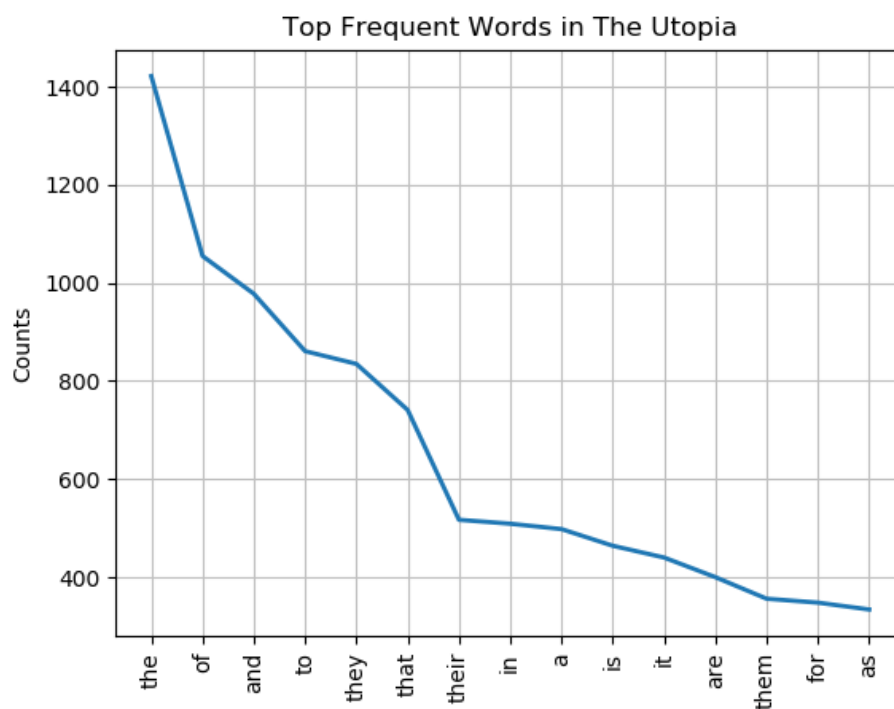
Most Frequent Words

Figure 1.1: Most Frequent Words' Frequency Graph

Figure 1.2: Word Cloud of Frequent Words

the	of	and	to	they	that	their	in	a	is	it	are	them	for	as
1422	1055	978	861	835	741	517	509	498	464	440	400	356	348	334

Table 1.1: Table of the most frequent words

Most of the words here are actually words that can be common in every book, yet "great", "they", "pleasure", "them", "their" glitters.

"..they are instructed in it from their childhood, partly by what they learn at school, and partly by practice, they being led out often into the fields about the town, where they not only see others at work but are likewise exercised in it themselves."" Pg . 94

Hythloday, as you can see here, prefers to use the word "they" when describing the life of the Utopians, and also most of the sections start with word "their" (e.g. their learning,

their cities, their magistrates and so on). As one may see above, this usage is also reflected in the number of "they" word.

Most Frequent Content Words

Content words are words that have meaning. This part, now, examines words which have meanings instead of focusing on functional words. It starts to become interesting from now on as we are able to comment on semantic nature of The Utopia.
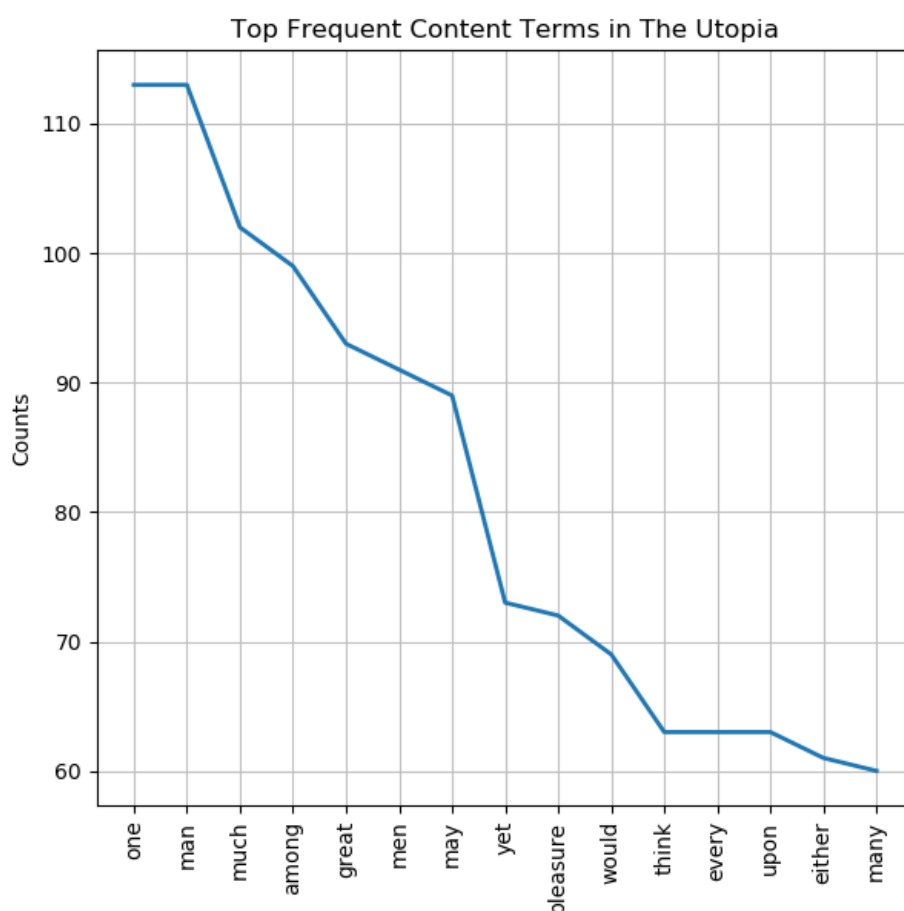

Figure 1.3: Most Frequent Content Words' Frequency Graph

Figure 1.4: Words Cloud of Frequent Content Words

man	men	pleasure	think	people	life	use	nature	others	things	country	labour	sort
113	91	72	63	55	51	47	46	46	44	39	36	36

Table 1.2: Table of the most frequent content words

The point of interest here is male domination and pleasure, nature.

To start with male dominance in Utopia, although Utopia is an "ideal country", we know that there is a hierarchical structure. Dominance of male oriented words like "man" and "men" is obvious.

"Their women, when they grow up, are married out, but all the males, both children and grandchildren, live still in the same house, <mark>in great obedience to their common parent</mark>.." Pg. 101.

We understand from quote that leader is the oldest male in family and there is patriarchial structure. We observe this male dominancy as not only from meaning, but also from the number of usage in text as "man" and "men". This may be the proof of patriarchial structure in Utopia.

Second word glitters in word clouds are "nature" and "pleasure". In particular, the most used word in *"Their Philosophies"* is pleasure.

"... and they call every motion or state, either of body or mind, in which <mark>Nature</mark> teaches us to delight, a <mark>pleasure</mark>." Pg. 124

Here, Hythloday gives definition of pleasure of Utopians. The most important aspect of Utopian philosophy is nature of happiness and its relation with pleasure. It is not surprising that the number of usage of these words is high , as "pleasure" have significant value in the philosophy of the Utopians.

Most Frequent Adjectives

Figure 1.5: Words Cloud of Frequent Adjectives

much	great	many	good	whole	live	little	necessary	greater	true	private	next
102	93	60	54	38	25	23	23	21	17	15	14

Table 1.3: Table of the most frequent adjectives

Adjectives constitute %14.2 of Utopia. As we may observe in the word cloud and also in table, the most common adjectives are ("much" "great" "many" " good ").

"I have only undertaken to give you an account of their constitution, but not to defend all their principles. I am sure that whatever may be said of their notions, there is not in the whole world either a better people or a happier government." Pg.134

Here, Hythloday claims that he does not praise all of the Utopian practices, however he actually does praise by saying *there is not in the whole world either a better people or a happier government.* Thus, it is not surprising that these words (much, great, good) are widespread in adjectives as Hythloday, in almost every respect, praises practices of the Utopians.

Word Phrases

Word phrases are small group of words that appear in Utopia. Word phrases consisting of size 2 are listed below.

Table 1.3: Table of word phrases

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****** 2 PHRASES IN The Utopia ********

of the        474

they are        341

to be       291

to the       289

by the        114

all the       95

that they        92

in their       62
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Most of them are functional words in this table except word "they". We observed this situation before in most frequent word graph. Hythloday, again, mostly refers to phrases related with "they" while describing Utopians.
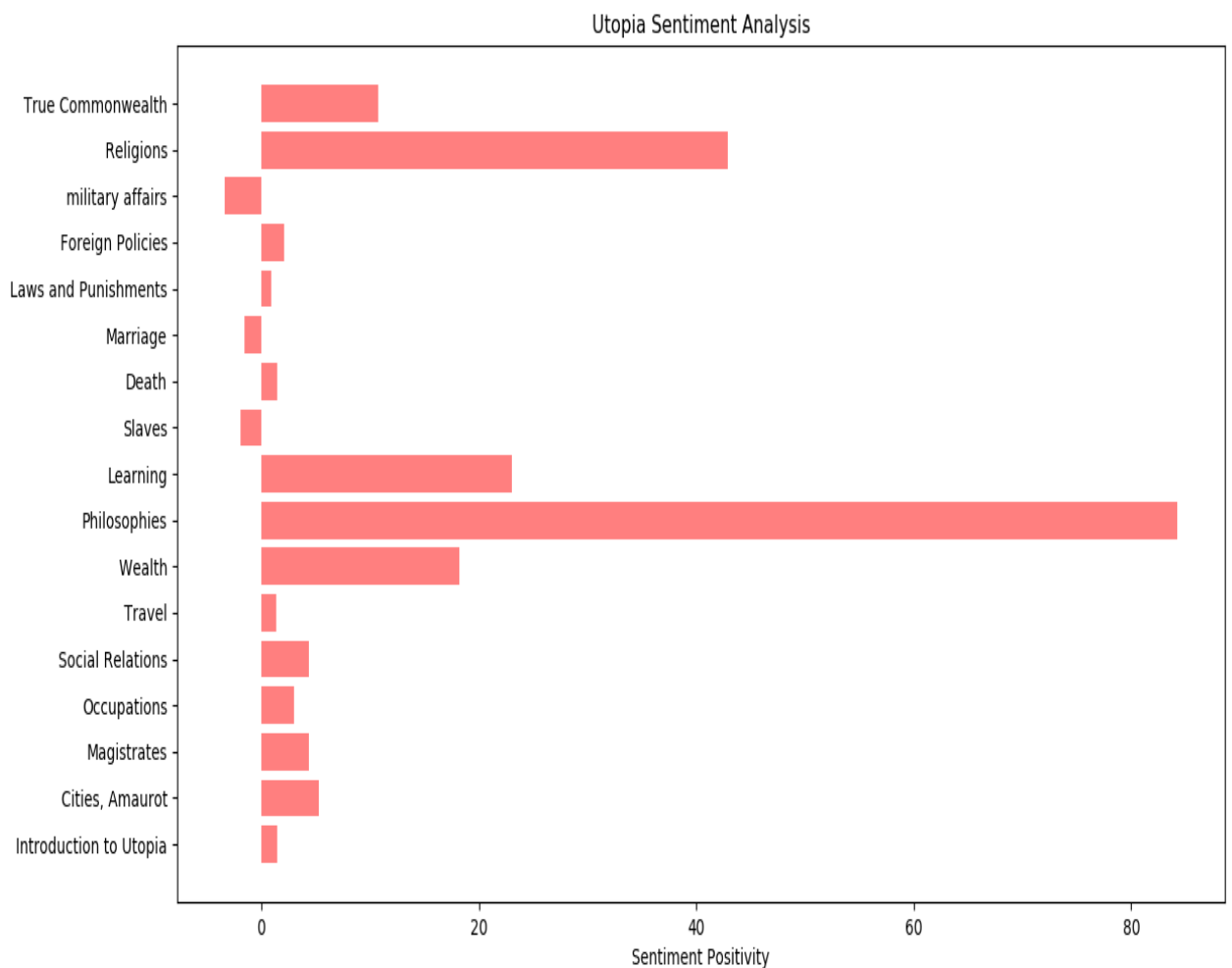
Semantic Analysis

This is the part where artificial intelligence tools are more commonly used and artificial intelligence gives its own feelings, thoughts on Utopia.

Sentiment Analysis

Sentiment analysis is a process to determine whether a text is positive, negative, or neutral. (Additional Information, this technique is quite common for analyzing people thoughts on a particular topic in Twitter.)

Before making sentiment analysis test for Utopia, ideal country, where everything would be perfect, the expected results were to be completely positive, however it is a bit different than what i expected.

To interpret this graph, there are 3 sections that are in negative mood (Military affairs, Marriage, and Slaves), 2 sections are extremely positive (Philosophies, and Religion), and others are in between neutral and extremely positive.

Huge positivity increase in *"Their Philosophies"* is not surprising as description of "pleasure", and "virtue" (which are very very very valuable subjects for them) of Utopians appear in this section.

"But, of all pleasures, they esteem those to be most valuable that lie in the mind, the chief of which arise out of true virtue and the witness of a good conscience." Pg.131

As Utopians value, virtue and good conscience, it is not surprising that this section is extremely positive.

The most negative section in Utopia is "Military affairs".

"They, in opposition to the sentiments of almost all other nations, think that there is nothing more inglorious than that glory that is gained by war." Pg.152

This negative outcome is reasonable as Utopians hate war and they don't think war grants any glory.

Another section that artificial intelligence interpreted negatively is slavery. I think it is strange to artificial intelligence that there are slaves in an ideal country, Utopia. This strangeness may be one reason of negative interpretation.
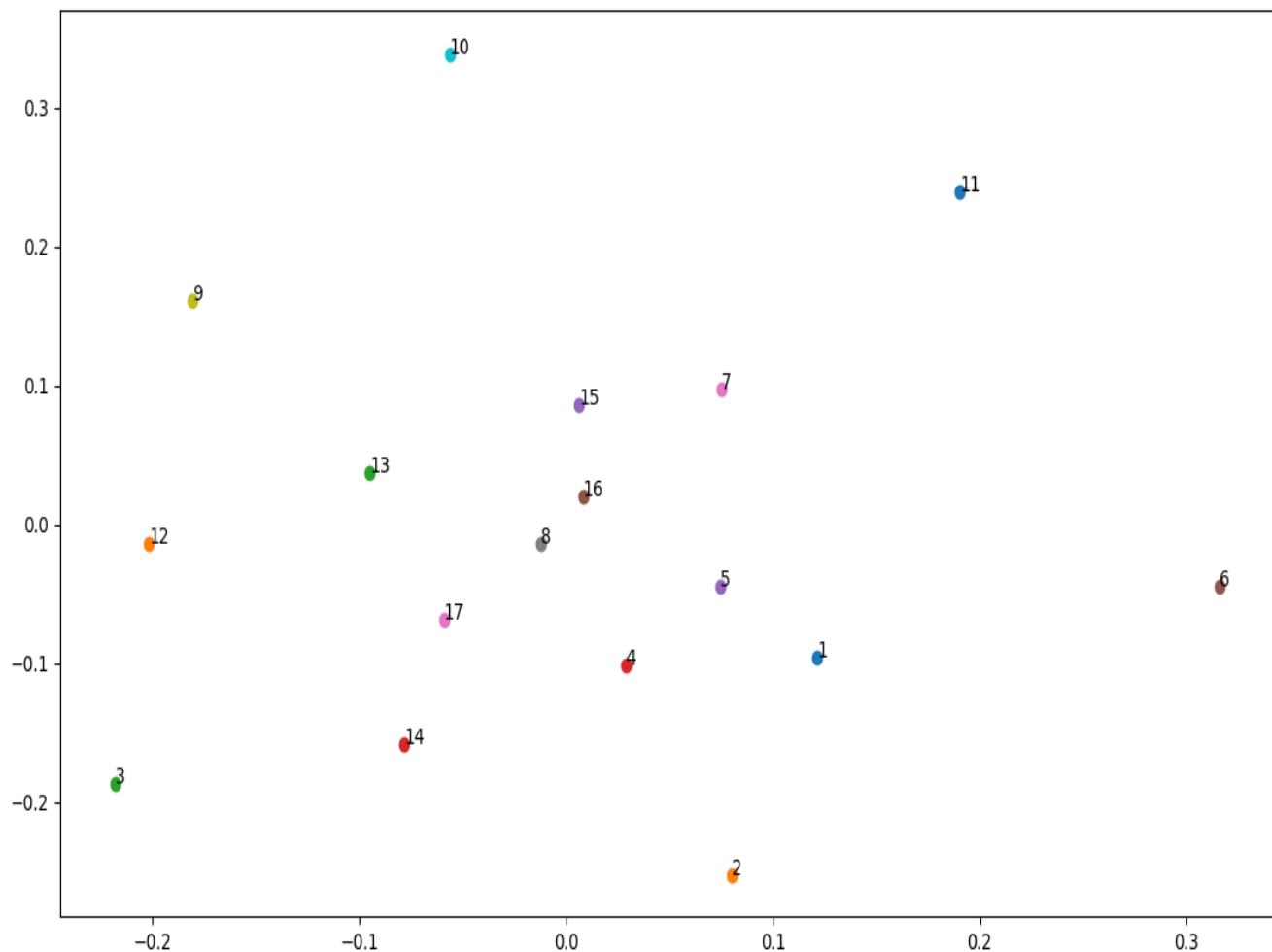
"They are kept at perpetual labour, and are always chained, but with this difference, that their own natives are treated much worse than others."

Although, slaves are not treated as atrocious as in their native country, perpetual labour, and their position in hierarchical structure may lead artificial intelligence to interpret this section's mood negatively.

Furthermore, As second book of the Utopia describes the Utopia and life of Utopians, we are able to interpret this positivity and negativity result as level of happiness of Utopians. As a result, according to artificial intelligence, Utopians are happy in most areas of life, but there are also negative sides of Utopia as we may clearly observe in terms of slavery.

Similarity Level Between Sections

This section analyzes semantic similarities and differences between sections and examines how consistent The Utopia as a text.

Here, you can refer to meanings_of_numbers.txt to check corresponding sections with numbers. (e.g. 10 corresponds to "their slaves" section).

Sections that are closer in graph are tend to be more similar. In graph, we observe that there is a grouping in middle, however, some sections (10,slaves, 11, death, 6 ,travel,) are far from this grouping. Being far away from a group can be interpreted as either section itself is not consistent with whole text or writer of such sections are not Thomas More.

To sum up, if Utopia is fiction, it is designed consistently except certain sections (death, slaves, travel), yet if it is not fiction, Utopia is not totally ideal as claimed by Hythloday.