

Intellectual Freedom and Libraries: a Quantitative Discourse Analysis

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Abstract: Human rights declaration was set and published by United Nation in 1948. The most important part of the human right declaration is that, everyone has the right to search and receive information at any time. To this respect, libraries play significant task in disseminating information (Knowledge) to each individual. According to library bill of right, "Libraries should challenge censorship in the fulfillment of their responsibility to provide information and enlightenment". The main question of this paper is that what position does library play in light of intellectual freedom and right of information? It is argued in this paper that there is a positive association between intellectual freedom and the library.

Method: To measure the state of intellectual freedom and the library a quantitative discourse analysis methodology explores the main question of the paper mentioned above.

Analysis: Latent Semantic Analysis (LSA) was patent on June 13, 1989 by Deerwester¹ (et al). LSA uses Singular Value Decomposition method to draw ontological relationship between words in a corpus [Deerwester,]. LSA techniques will be used to illustrate the linkage between the intellectual freedom and the libraries. The paper will analyze following headlines: First, there will be an investigation of issues of intellectual freedom and freedom of expression in modern age. Secondly, the role of libraries as a focal point of "intellectual freedom" in digital age are reviewed by examining selected sentences from *ALA* (American Library Association), *IFLA/FAIFE* (International Federation of Library Association) and *TLA* (Turkish Library Association adopted by *TLA*'s General Executive Board in February 22, 2008). Finally, the result of the discourse analysis will be clarified.

Results: An assessment of the link between the intellectual freedom and right to access the information supports the hypothesis of the positive correlation between intellectual freedom and the libraries. Applying discourse analysis reveals the text coherence among selected sentences extracted from different library association (*IFLA/ALA/TLA*) is a sign of common ground: "Intellectual Freedom" and "Library" are shared concept among them.

Conclusion: The next step might be to investigate the Intellectual Freedom's issues such as copyrights, freedom of information act, academic freedom, cyber crime treaty, and biometrics and so on. Albeit, democratic libraries as a hub is the place propagating the preceding issues.

Key terms, Intellectual Freedom, Libraries, Human Rights.

1 United States Patent 4,839,853 Deerwester , et al. June 13, 1989

Introduction

Article 19 of the United Nations Universal Declaration of Human Rights says that “Everyone has the right to freedom of opinion and expression; this right include freedom to hold opinions without interference and to seek, receive and impart information and ideas through any media and regardless of frontiers” [1]. Here to say every human being has the fundamental right to have access to all expressions of knowledge, creativity and intellectual activity, and to express their thoughts in public.

According to International Federation of Library Association and Institutions (IFLA) freedom of thought and freedom of expression are necessary conditions for the freedom of access to information [2]. The right of access to information and ideas is vital for any society. If citizens are to participate and make informed choices, they must have access to political, social, scientific and economic information and cultural expressions. They need access to the widest range of ideas, information and images. Freedom, prosperity and the development of society depend on education as well as on unrestricted access to knowledge, thought, culture and information.

The safeguarding of the right to know recognizes the freedom of expression. The right to know relates intrinsically to the freedom of thought and conscience and all other fundamental human rights. However, there is a correlation between intellectual freedom and right to information. The right to know and the freedom to express be two sides of the same coin, they coexist.

Advancement of new information technology has enabled everyone to access information at tip of his or her fingertips. Invention of Internet has speed up the informational exchange among not only communities, schools, research communities, but also amongst governments, countries well. Governments have published or provided necessary information regarding their

citizen’s rights, which are accessible at anytime from anywhere as long as technological infrastructure is ready for people to use. Due to accessing information became available to everybody intellectual property right became an important issue at the present. The main question of this paper is that what role does library play in light of intellectual freedom and right of information? It is argued in this paper that there is a positive association between intellectual freedom and library.

Intellectual Freedom and Library

Core library values, such as intellectual freedom, are determined by overlapping consensus [3]. One may argue that the state of intellectual freedom in libraries is a clear indication of the close connection between the intellectual freedoms and accessing the information. The state of intellectual freedom in libraries is also an important sign of the progress of democracy in any nation [4]. Libraries play an important part in disseminating the right of information among citizens. Democratic societies in which their citizens enjoy the right of freedom of any kind (as long as they do not violate others right) must have access to information such as political, social and technological right as they wish. Freedom of expression and thought are two distinguishable element of intellectual freedom. According to IFLA (International Federation of Library Association and Institutions), state of intellectual freedom in the libraries is an indication of democratic societies. So, how can we measure the state of intellectual freedom in the libraries? Nevertheless, before answering the latter question, we need to investigate libraries as a hub of knowledge in which promotes and enlighten her citizen on any issues.

Renaissance and Libraries

Press invention by Gutenberg has had big impact on how information has utilized, disseminated and archived in the libraries since 1400 until

now. The invention of the press especially in European countries had enabled people accessing to information faster and more efficient.

According to Francis Bacon a British thinker and philosopher, printing changed the future of the societies in the face of the earth. Printing had become a gateway for thinking or thinkers. As people become more aware of their civic rights, the demand for information increased as well. By 1600, 1.250.000 books published. Even though, to this day the “Magna Carta” (Great paper) has been a prelude to “human rights”.

Publication has had impact on society as to each citizen were bound to certain laws and regulations. Publication of the first journals, named, “philosophical transactions of the royal society history” in 1665 in London was a turning point for scientific and philosophical advancement in Europe.

Compilation of journals, book’s publication in western countries advanced their societies and eventually leads to the rise of scientific discovery. For example, in 1672 the journal published Isaac Newton’s first scientific paper. Moreover, scientific evolution leads to other progresses as well as social and philosophical advancement.

Library and Human Rights

Declaration of human rights has been a milestone set by United Nation in 1945. Since then, it has been influx of publication and especially in past decades, internet technology has quadrupled the information (data) daily and continuing.

Right to access the information for each citizen in every society at any time is an issue of intellectual freedom. This right to intellectual freedom is essential to the creation and development of a democratic society [5].

Libraries are gate to information and good quality library is responsible of educating its mem-

bers on intellectual freedom and its importance on society as a whole. Nevertheless, intellectual freedom cannot put to practices, if governments do not support it. Moreover, libraries ought to provide information to public, institutes and schools to their constituency. For example, there are an estimated 123,291 libraries of all kinds in the United States today. The number is an indicator of how important is library and librarianship on intellectual freedom.

The American Library Association (ALA) affirms that all libraries are forums for information and ideas, and that the following basic policies should guide their services. Books and other library resources should provide for the interest, information, and enlightenment of all people of the community the library serves.

- Materials should not exclude from people because of their origin, background, or views of those contributing to their creation.
- Libraries should provide materials and information presenting all points of view on current and historical issues. Materials must not proscribe or remove because of partisan or doctrinal disapproval by governments.
- Libraries should challenge censorship in the fulfillment of their responsibility to provide information and enlightenment.
- Libraries should cooperate with all persons and groups concerned with resisting abridgment of free expression and free access to ideas.
- A person’s right to use a library should not deny or abridge because of origin, age, background, or views.

Libraries should also make exhibit spaces and meeting rooms available to the public; they should make such facilities available on an equitable basis, regardless of the beliefs or affiliations of individuals or groups requesting their use. Moreover, in parallel to United Nations’ Bill of Rights the Turkish task force (TLA) has adopted a declaration as following:

- I. Information centers shall adopt the freedom of expression-centered approaches in developing policies and in practice.
- II. All persons have a right to have equal and free access to information in a contemporary society. Information centers make it possible and provide opportunity to exercise this right in the best way. Persons cannot be precluded for making use of expression of knowledge in information centers because of political, religious, national, ethical, racial, ethnic background, gender and similar reasons (to name just two statements out of eight statements).

Intellectual Freedom and its Issues

One cannot study the intellectual freedom itself, alone and without look at its issues. Rapid development of technology in recent years has generated new issues for democratic society and modern society that cannot be passed unnoticed. What are these issues? As it is stated on ALA (American Library Association) online social networking, freedom of speech, academic freedom, biometric and copy rights are some of them to mention. Democratic Libraries ought to be a place to follow legislations or current issues, which affect the life of its citizens.

Method:

To measure the state of intellectual freedom in the library a quantitative discourse analysis methodology will be employed by using latent semantic analysis (LSA) technique to analyze the main question of the paper.

Discourse Analysis of Intellectual Freedom

Having said that the libraries have been a hub of knowledge (information), we have reached the point that - how can we measure the state of intellectual freedom in the library? As it is stated on the web site of IFLA- (1) Committee on Free Access to Information and Freedom of

Expression (ALA), (2) "Intellectual freedom is the core of the library concept" and (3) TLA" Information centers shall adopt the freedom of expression-centered approaches". Therefore, by applying "Discourse analysis" to above statements in which withhold texts (corpus of human right declaration and Intellectual freedom) should reveal the ontological aspect of the text, which put the library as essence of the intellectual freedom. For example, we have observed all manuscripts or texts which have been written by organization such as IFLA, ALA and TLA, applying discourse analysis on those verses reveals an interpretation of a theme that echoes "library" is an essence of intellectual freedom. Actually, discourse analysis method (quantitative method) focuses on the coherence of the message of these texts (Bill of rights ...) historically. Discourse analysis, However, Discourse Analysis does not provide definite answers; it is not a "hard" science, but an insight/knowledge based on latent semantic analysis that it applies on the corpus [6, 7].

Methodology

Latent Semantic Analysis (LSA) was patented by Deerwester, (et al) [8]. LSA uses Singular Value Decomposition technique to draw ontological relationship between words in a corpus. Scientists from different fields of science have used LSA. Latent Semantic Analysis is a fully automatic mathematical/statistical technique for extracting and inferring relations of expected contextual usage of words in passages of discourse [9]. In nutshell, LSA uses matrix multiplication and Singular Value Decomposition (SVD) technique to draw relation among its terms (When you compare two terms you compare the cosine of the angle between the vectors representing the terms) [6].

Singular Value Demonstration

In the nutshell, the figure below illustrates how SVD works. According to the project, "Docu-

ment Ontology Extractor (DOE)”, done by the Research Team, Govind R Maddi, Jun Zhao, Chakravarthi S. Velvadapu from University of Maryland Baltimore County, Bowie State University with the sponsored ship of Department Of Defense, USA; Singular Value Decomposition decomposes a given matrix into three components - U, S and V [10].

$m \times n$ term-document matrix A, of rank r , expressed as the product:

- $A = U * S * V^T$ (1)
- U is $m \times r$ term matrix
- S is $r \times r$ diagonal matrix
- V is $r \times n$ document matrix
- Diagonal of S contains singular values of A in the descending order.
- A is formed from LSI as follows:
- $A = U^S * S^S * V^{ST}$ (2)
- U^S - derived from U removing all but the s columns
- S^S - derived from S removing all but the largest s singular values
- V^{ST} - derived from V^T removing all but the s corresponding rows

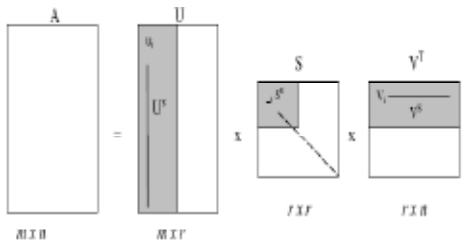


Figure2 Singular Value Decomposition

For better understanding of SVD, It can be obtained from Scott Deerwester, et al. [11].

Analysis

We use quantitative method on selected terms which has been appeared in several passage extracted form United Nation Human right declaration, IFLA and TLA. In our case, we have done some experiments using Latent Semantic Analysis technique on the text in order to draw

the fact that “intellectual freedom is an essence of library”.

First step is to group several sentences (statements) that appear in IFLA, ALA and TLA regarding Library and Intellectual freedom such as:

- A. Everyone has the right to freedom of opinion and expression
- B. Right includes freedom to hold opinions without interference and to seek and receive and impart information and ideas through any media and regardless of frontiers.
- C. Libraries funded from public sources and to which the public have access shall uphold the principles of intellectual freedom.
- D. A commitment to intellectual freedom is a core responsibility for the library and information profession
- E. Libraries provide access to information, ideas and works of imagination. They serve as gateways to knowledge, thought and culture.
- F. All persons have a right to have equal and free access to information in a contemporary society. Information centers make it possible and provide opportunity to exercise this right in the best way. Persons cannot be precluded for making use of expression of knowledge in information centers because of political, religious, national, ethical, racial, ethnic background, gender and similar reasons

Nevertheless, in order to see how LSA works, we run the above documents and terms against the LSA space, which is, located in this address (<http://lsa.colorado.edu/>), deducing our discourse. LSA space is a mathematical representation of a large body of text [12]. Some applications of LSA are as follows:

- Near Neighbors
- One-To-Many Comparison
- Matrix Comparison
- Sentence Comparison
- Pair wise Comparisons

Each of the application utilizes the document according to its functionality

Near Neighbors

- This program allows you to submit a term or a short text and receive a list of terms nearest the submission (in an LSA semantic space). For example, submitting the term Freud and using the psychology semantic space might return:
- The 5 terms in the psychology space most similar to the submitted document are Freud, Sigmund, Trans, Strachey, unconscious, and using the psychology semantic space might return as it depicts in table1.

LSA Similarity	Term
0.97	freud
0.80	sigmund
0.58	trans
0.58	strachey
0.55	unconscious

Table 1, 5 terms in the psychology space most similar to the submitted document

One to Many Comparisons

- This program allows you to submit **1** primary text and **n** other texts to compare to it. You will receive a **1 x n** matrix of the cosine comparisons. For example, with **library** as the primary text and with books ,information, freedom, and intellectual as the other texts, the program will return: (see table2)

Texts	Library
Books	0.89
Information	0.30
Freedom	0.03
Intellectual	0.07

Table 2 Show how close are Books and Library

The cosine angles of intellectual and library is less significant, because the current semantic space may not be appropriate for the experiment. However, it can be improved by a well form related semantic space.

Sentence Comparison

- This interface allows you to compare the similarity of sequential sentences within a particular LSA space. Each sentence is compared to next sentence(see table3)

COS	1	Everyone has the right to freedom of opinion and expression.
.045	2	Right includes freedom to hold opinions without interference and to seek and receive and impart information and ideas through any media and regardless of frontiers.
0.38	3	Libraries funded from public sources and to which the public have access shall uphold the principles of intellectual freedom.
0.33	4	A commitment to intellectual freedom is core responsibility for the library and information profession.
.66	5	Libraries provide access to information, ideas and works of imagination.
.26	6	They serve as gateways to knowledge, thought and culture.
.19	7	All persons have a right to have equal and free access to information in a contemporary society.
.58	8	Information centers make it possible and provide opportunity to exercise this right in the best way.
.42	9	Persons cannot be precluded for making use of expression of knowledge in information centers because of political, religious, national, ethnic, racial, ethnic background, gender and similar reasons.

Table 3 Semantic space is first Year College (factor300)

According to the calculation the mean and standard deviation are:

1. Mean of the Sentence-to-Sentence Coherence is 0.35

- Standard deviation of the Sentence to Sentence is 0.39

Matrix Comparison:

- This program allows you to submit n terms/texts and receive an n x n matrix of the cosine comparisons between the texts(see table4).
- Apply five terms such as Freedom, expressions, Libraries, intellectual, information

Document	Freedom	Expression	Libraries	Intellectual	Information
Freedom	1	0.27	.008	0.19	0.03
Expression	0.27	1	.006	.034	0.10
Libraries	0.08	0.06	1	0.10	0.32
Intellectual	0.19	0.34	0.10	1	0.07
Information	0.03	.10	0.32	0.07	1

Table 4 Matrix Comparison of five terms:

Pair Wise Comparison

- This interface allows you to compare the similarity of multiple texts within a particular LSA space. Each pair of texts is compared to one another (see table5).

Text	Intellectual Freedom	Text	Freedom of Thoughts
Freedom of Thoughts	.40	Turkish Libraries	.40

Table 5 shows the cosine similarity of selected terms

Tables 1, 2, 3, 4 and 5 shows how LSA utilizes the documents and terms accordingly to their specific semantic space. For our case, sentence *comparison* compares the sentences extracted from three different institutions such as IFLA,

ALA and TLA. The result of sentence-to-sentence comparison reveals the cosine similarity as well as the sentence coherence too.

Results Discussion

Above tables 1, 2, 3, 4, 5 show the LSA application and their functionality over a specific semantic space. Nevertheless, choosing a right LSA space plays an important part in the discourse analysis' results. Discourse Analysis qualitatively or qualitatively tries to find the meaning of the text, which are hidden from the reader. Discourse analysis is not a hard science. By utilizing Latent Semantic Analysis as a quantitative method on selected texts, predicting the contextual-usage of the terms or documents in the LSA spaces. One the other hand, one should know that discourse analysis is an unpredictable; it based on prediction and distinction or epistemological assumptions of the text. In our case, we have applied discourse analysis on "Library science" and "Human Right Declaration", and their attributes such as freedom, Intellectual freedom, and information sharing and so on ...

How did we attain this process (interpretation of the text) using Discourse analysis? First, we need to choose our LSA spaces properly. For instance, if one is working on a biology problem, we need to use a LSA space that contains the biology related corpus. Second, we need to set the parameters correctly. Third, we need to use a bigger corpus. For instance, one should use 200, 500 matrix for better result. The challenge is to creating of semantic space of our own.

Conclusion

Library plays an important role in a democratic society as intellectual freedom is. We have applied text-analyzing technique, such as LSA, which is a quantitative method to draft a relationship between "Library" and "Intellectual freedom". Nevertheless, applying qualitative

method on more text passages will be another alternative to do as well. Moreover, one cannot study intellectual freedom without investigating its issues such as copyrights, freedom to read and express ideas, access to internet, and access to medical information. We foresee that library will play an important role of educating her citizens.

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