

An In-depth Analysis of the Library of Congress Classification
(LCC) system and potential future use by the Directory of Open
Access Journals (DOAJ)

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ISI 5302: Knowledge Organization
Fall 2022
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1. Introduction

The goal of this project was initially to compare the Library of Congress Classification (LCC) classes used by the Directory of Open Access Journals (DOAJ) with the LCC main classes (2022). However, after comparing, we noticed that there were no differences between the two systems. Therefore, this project will provide an in-depth analysis of the truncated LCC system used in the DOAJ context, its limitations based on the literature and on varied examples, an evaluation of the full 2022 LCC system and recommendations for improving the system or for the creation of an ideal system.

The DOAJ was founded in 2003. It is an index of open access journals that prides itself on sharing free content of high quality (DOAJ, 2022), especially with the implementation of a new evaluation process and criteria in 2013 (Marchitelli et al., 2017). The journals come from all around the world and are published in different languages. The DOAJ does not discriminate and makes it its mission to promote diverse content and being inclusive (Morrison, 2017). It is an independent organization that collaborates with volunteers (DOAJ, 2022). The DOAJ's goal is to help publishers and editors publish their journals based on the DOAJ's standards and to make them accessible for everyone (DOAJ, 2022). Researchers could then find potential journals in which they can publish their work or journals with content that will help them with the research they are conducting. The DOAJ's guidelines for open access journals are the international standards to follow. Finally, the organization also provides the metadata for the journals. Quality and open access are part of the DOAJ's core values (DOAJ, 2022). The DOAJ's services are free (DOAJ, 2022) which perfectly align with these values. The journals can be in any language and address any subject (DOAJ, 2022). They can also come from anywhere in the world, which reflects the globality that the DOAJ strives to achieve with its publications. To classify a journal,

the DOAJ will first receive an application from the publisher with a maximum of six subject keywords. The DOAJ editors will review the application. Once the journal has been accepted, then two LCC subjects will be assigned to it. The DOAJ is using a truncated version of the LCC. The DOAJ has 18,293 indexed journals as of September 28, 2022. However, that number keeps growing (DOAJ, 2022). For this project, we will use 18,293 as the number of journals. They are distributed across 20 classes. R-Medicine (26.9%) and H-Social Sciences (22.7%) are the two most prominent classes, while V-Naval Science (0.2%) has the lowest number of journals. The main class Medicine encompasses 17 subclasses whereas Naval Science has 10 and is a more narrowed category. The full list on how the journals are distributed across the LCC classes is available in Table 1.

Table 1

Distribution of DOAJ journals across LCC classes

Main class	Main class title	Label	Number of journals	% of journals in DOAJ
R	Medicine	R - Medicine	4 927	26,9%
H	Social Sciences	H - Social Sciences	4 154	22,7%
Q	Science	Q - Science	3 305	18,1%
T	Technology	T - Technology	2 771	15,1%
L	Education	L - Education	2 167	11,8%
P	Language and Literature	P - Language and Literature	2 100	11,5%
B	Philosophy. Psychology. Religion	B - Philosophy. Psychology. Religion	1 457	8,0%
G	Geography. Anthropology. Recreation	G - Geography. Anthropology. Recreation	1 377	7,5%
S	Agriculture	S - Agriculture	971	5,3%
K	Law	K - Law	895	4,9%
J	Political Science	J - Political Science	704	3,8%
N	Fine Arts	N - Fine Arts	697	3,8%
D	World History and History of Europe, Asia, Africa, Australia, New Zealand, etc	D - World History and History of Europe, Asia, Africa, Australia, New Zealand, etc	627	3,4%
A	General Works	A - General Works	372	2,0%
C	Auxiliary Sciences of History	C - Auxiliary Sciences of History	214	1,2%
Z	Bibliography. Library Science. Information Resources (General)	Z - Bibliography. Library Science. Information Resources (General)	190	1,0%
E-F	History of the Americas	E-F - History of the Americas	164	0,9%
M	Music and Books on Music	M - Music and Books on Music	95	0,5%
U	Military Science	U - Military Science	49	0,3%
V	Naval Science	V - Naval Science	32	0,2%
all journals			18 293	100,0%

The current classification system has limitations which is why we are looking into a new system or at least a list of requirements for an ideal system. The LCC system was created by the Library of Congress of the United States during the late nineteenth century. Therefore, the fact

that it is outdated and ethnocentrism around American and Western cultures are at the core of its limitation problems (McKennon, 2006). This is reflected in the main classes: History of the Americas has its own classes, separated from World History, thus creating an inherent bias. In the context of the Library of Congress, having a separate class possibly makes sense, but in other contexts around the world, it does not. The literature review will also reveal that certain topics have been misrepresented by the LCC system. There are also some difficulties to categorize complex and varied subjects. Other problems related to translation and misrepresentation are encountered using the LCC system. The LCC assumes that there are universal categories (Baker & Islam, 2020) and make other general inferences. Religion, history, and cultures are topics that have been proven to be classified incorrectly. Marginalized groups are often misrepresented (Howard & Knowlton, 2018) and some terms are outdated (Howard & Knowlton, 2018). These types of misclassifications mean that entire communities can be neglected, proving that there is a need to either modify the LCC system or to create a new one. In the literature review, we will provide more examples, but one thing that is interesting to point out, is that even though there are international institutions that faced some challenges with the LCC system, we do not have to go far away to find other examples: we can take a look at Library and Archives Canada (McKennon, 2006).

The ideal classification should fulfill the following requirements and be:

- A global approach that reflects modern terminologies and the DOAJ's diversity
- Adaptable, modifiable, and extendable
- Easy for humans to use when classifying journals or searching for journals
- Easy for machines to use when ingesting metadata
- Easy to map and migrate the existing LCC categories to

· Open source

The new system could possibly be an adaptation of the current LCC, which is an approach that other libraries have taken (Stapleton et al., 2021). Terms can be modified, and new vocabulary can be implemented. In these instances, it seems to fix the problems of misclassification but might create other issues such a lack of uniformity and consistency. It would be interesting to evaluate if these adaptations by individual institutions could be used by the DOAJ. Ultimately, the goal of a new or modified classification system would be to overcome challenges that have been encountered by other institutions so that the DOAJ could better identify the journals it indexes.

2. Literature Review

Many authors have criticized the Library of Congress Classification (LCC) system due to its ethnocentrism around an outdated euro-western and very American perspective which causes problems when it comes to the classification of materials originating from outside of that narrow scope (McKennon, 2006; Jiang, 2007; Diao & Cao, 2016; Baker & Islam, 2020). The following resources address how this ethnocentric perspective is very limiting and fails to meet universal standards despite its frequent usage on an international scale. The primary structural shortcomings of the LCC include its inadequate terminology choices and classification hierarchies. From these main structural issues comes fragmentation, biased and inadequate representation, marginalization, and restricted research mobility (Howard & Knowlton, 2018). Taking this into consideration, when a standard classification system such as the LCC is created based on a certain world view, there is an inherent cultural bias which affects all the material classified outside of that worldview (Diao & Cao, 2016).

2.1 Biases and problematic representations

The findings of a knowledge mapping study conducted by Zins and Santos (2011), revealed that top levels of the hierarchical structure of the LCC system do not coincide seamlessly with their subsequent levels and that the terminology chosen for the subject headings was often “biased and misleading” (p.897). It was also discovered that records exist with malformed data, for example, invalid characters such as punctuations were included in several call numbers (Clark & Smith, 2022).

Since the process of naming has the power to assign an identity to a subject, ultimately controlling its access and representation, equitable use of language is essential for an equitable classification system. This is absent in the LCC system due to the fact that a large portion of the linguistic choices reflects mainstream euro-western centric definitions rather than subject headings and metadata that are culturally relevant and accurate according to the standards of the subject and entities represented (Hajibayova & Buente, 2017; Jiang, 2007; Diao & Cao, 2016). In fact, it is highlighted that the core Chinese ancient texts are improperly classified in the LCC under the P class and PL subclass of ‘Language of Eastern Asian, Africa, Oceania,’ when they should not simply be considered as literature because they have significantly influenced China throughout its history as philosophical or historical or canonical texts (Jiang, 2007).

2.2 Marginalization

The order in which terms are placed in a subject heading was found to further alienate historically marginalized peoples (Clark & Smith, 2022). For example, when conducting a search concerning women and motion pictures the search would recommend and then present results placing women in a secondary position in the subject heading and motion pictures in the primary position (Clark & Smith, 2022). This recalls the ways in which religions are separated into

classes within the LCC system that reinforce dominant and colonial views of such while promoting Christianity as the dominant and ideal religion, ultimately belittling all other religions (Baker & Islam, 2020). The lack of space and proper division devoted to the classification of the volume and variety of Islamic knowledge exemplifies the ways in which religions are devalued and pushed to the sidelines (Idrees, 2012). This marginalization contributes to an overall misrepresentation of groups that can be traced back to the outdated and euro-western-centric perspective that remains deeply rooted in the terminology and structure of the LCC (Adler et al., 2017; Clark & Smith, 2022; Howard & Knowlton, 2018; Jiang, 2007; Diao & Cao, 2016).

2.3 Fragmentation

Due to its euro-western-centric nature, the LCC fails to take into account ulterior information management practices. As a result, fragmentation is a common issue within the system, particularly when it comes to the complexities and variations pertaining to the classification of history around the world (Diao & Cao, 2016). When it comes to Chinese archaeological reports, they can be found dispersed throughout the system and classified according to chronological order as well as by subject headings that are irrelevant. As such, Chinese archaeological reports can be found in prehistoric reports which are classified under Anthropology and in historic reports which are classified under History (Diao & Cao, 2016). This does not account for the ways that Chinese history is divided differently compared to the ways that European and American history are divided (Diao & Cao, 2016). Moreover, the dispersing and fragmentation of related subject matter feeds into misconceptions based on outdated prejudice (Smith, 2015). This brings to mind the deliberate separation between art, found in N, and craft in TT due to the gendered connotations assigned to them during the 19th and 20th centuries. Arts being associated with scholarly prestige typically dominated by a male

presence whereas crafts were bound to the domestic sphere and typically associated with women and children (Clark & Smith, 2022).

2.4 Negative impacts on research, inefficient for retrieval, difficult to decide where to store new content

The LCC also relies too heavily on a literary warrant where a certain number of publications need to be added to justify the creation of a new classification number. For example, the works concerning African American studies, or LGBTQIA studies, as well as scholars, are circulated less due to historical societal prejudices and are not admitted into the academic sphere as often as mainstream euro-western centric materials (Howard & Knowlton, 2018). It has also been suggested that the widespread use of the LCC system and its ethnocentrism has inhibited countries outside of the United States from accessing information on their own countries' history because it fails to account for different views of history (McKennon, 2006). As a result, the biased representations and lack of transparency exhibited by terms as well as the system structure hinder research mobility, making it more challenging for scholars and the general public to fulfill their information needs (Clark & Smith, 2022).

2.5 Why & How some chose to use LCC rather than another system

Due to the frequent use of LCC in the academic world, professionals have become all too familiar with its faults. However, in doing so they have also been able to work around some of these difficulties by using the system as a model and as such, modifying it to their specific needs. In fact, The American Library Association's Analysis Committee Working Group on Alternatives to LCSH is working towards the creation of a system that would allow libraries to address issues with pre-existing term choices found within the LCC system by giving them the option to change these terms within their catalogues (Stapleton et al., 2021). The ability to

modify this system based on the needs of specific libraries and their information specialties have been accepted by some libraries as the more practical solution as opposed to reworking the universally used framework of LCC in its entirety. For example, the lack of an adequate classification structure within the LCC for the volume and variety of Islamic knowledge has spurred libraries to develop their own additional systems to classify the vast Islamic knowledge in their libraries (Idrees, 2012). Additionally, Library and Archives Canada (LAC) also adapted the LCC system to their needs, mainly those pertaining to classifying local knowledge and history. In fact, LAC created a new class, the FC class which allows them to classify material on Canadian history where there was not a specific place for it before (McKennon, 2006). On a similar note, to combat the biased and inadequate use of terms, libraries in Mexico have created and implemented their own thesauri based on Mexican specific subjects (McKennon, 2006).

This implies that while the overall system may be rigid, it does have some room for small-scale and independent modification. More recently in 2021, the American Library Association endorsed the creation of the Cataloguing Code of Ethics, proposed by the Cataloging Ethics Steering Committee provides a guide for professionals to follow when reevaluating the ethical weight of the metadata employed within their local institutions (Clark & Smith, 2022). A study conducted in academic libraries in the United States as well as in Nigeria noted a strong preference for LCC over the DDC, for reasons pertaining to cost, technological resources, ease of use for new time users and endorsements coming from higher academic authorities within their community (Lund et al., 2019).

3. Evaluation

3.1 DOAJ and 2022 LCC System – Breakdown and Hierarchy

The DOAJ utilizes the LCC system of classification. This classification system is composed of multiple classes and sub-classes, with varying levels of detail in each of the classes. The main classes within the LCC system utilized by the DOAJ and the 2022 LCC are tabulated in Table 2, and represent the parent classes from which all subsequent sub-classes stem from.

Table 2

LCC Classification System Main Classes Designation and Titles

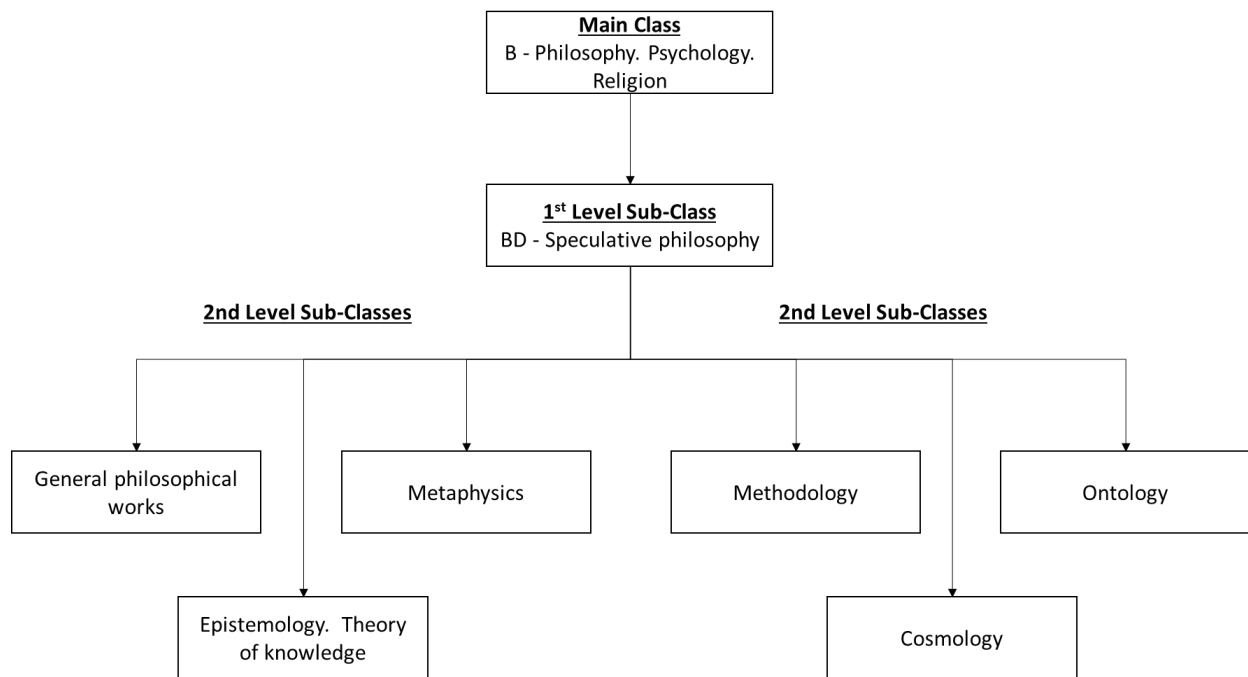
Main Class Designation	Main Class Title
A	General Works
B	Philosophy. Psychology. Religion
C	Auxiliary Sciences of History
D	World History and History of Europe, Asia, Africa, Australia, New Zealand, etc.
E-F	History of the Americas
G	Geography. Anthropology. Recreation
H	Social Sciences
J	Political Science
K	Law
L	Education
M	Music and Books on Music
N	Fine Arts
P	Language and Literature
Q	Science
R	Medicine
S	Agriculture
T	Technology
U	Military Science
V	Naval Science
Z	Bibliography. Library Science. Information Resources (General)

There are 20 main classes in total. Each of these main classes are then split into sub-classes that provide greater detail and granularity when categorizing the information. Each of the main classes has between 1 and 25 sub-classes that further categorize the information. All

together, the DOAJ uses 173 sub-classes to categorize and sort information. Within each of these 1st level sub-classes, there are 2nd level sub classes that further categorize the information in a more specific format. As there are multiple 2nd level sub-classes per 1st level sub-class, there is a much greater quantity and granularity of these titles. To assist in visualizing the hierarchy of the classes, Figure 1 provides a flowchart of the relationships between the classes.

Figure 1

Example of an LCC Classification Hierarchy



3.2 2022 LCC and DOAJ LCC Class Analysis

In order to determine the usefulness and the level of granularity of the DOAJ classification system, the 2022 LCC classification system which was taken straight from the

Library of Congress (n.d.) website will be analyzed and a comparison will be made between the two systems.

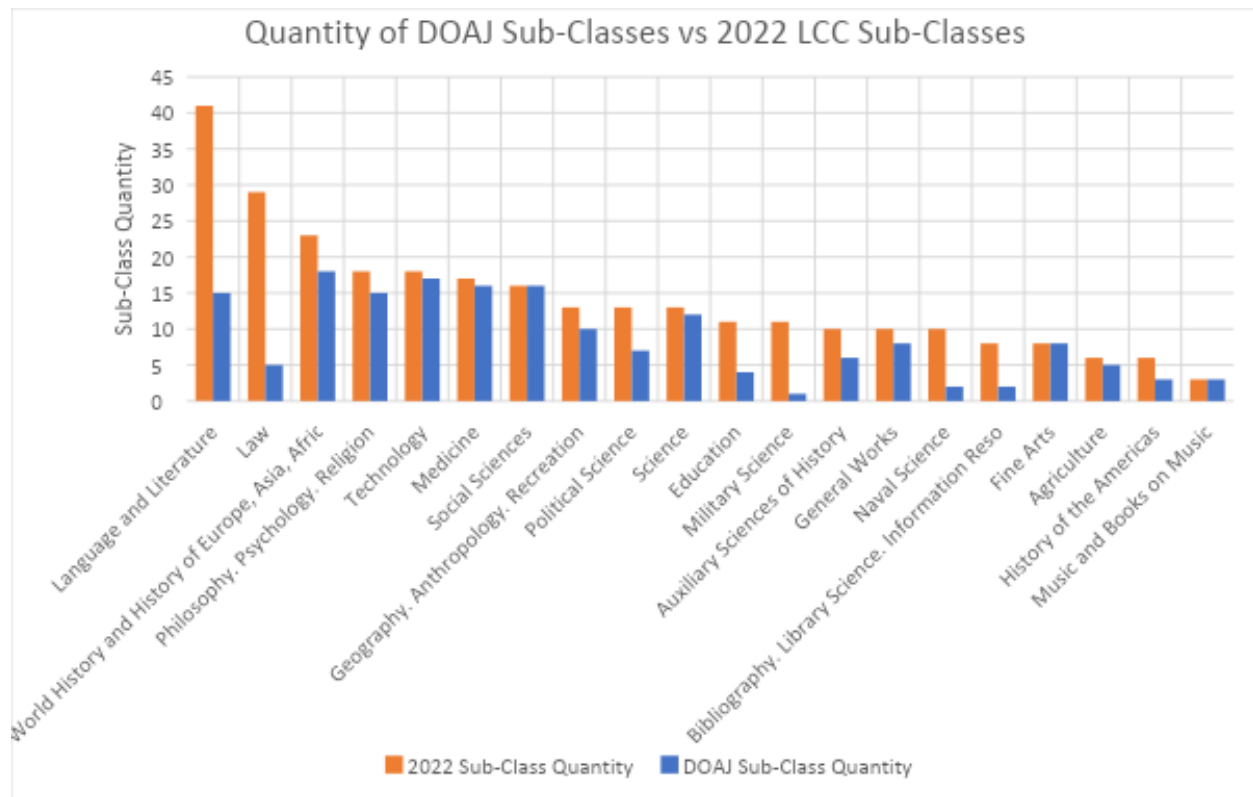
The 2022 LCC classification system used by the Library of Congress utilizes the same 20 main class titles as the DOAJ LCC system. High level, the two classification systems are the same. However, upon analyzing the 1st level sub-classes it was found that there were some differences between the two systems. The 2022 LCC system has 284 1st level sub-classes, which is 111 sub-classes more than the DOAJ LCC classification system. Therefore, the current 2022 LCC has more granularity and detail than the DOAJ LCC classification system. 111 1st level sub-classes can equal hundreds of 2nd level sub classes that are missing from the DOAJ LCC to provide greater detail.

Having 111 additional sub-classes creates further granularity in the data and allows for more accurate classification of information. It is important, especially at the high levels of classes, to have enough categories that all information can be sorted properly. An example of this is the DOAJ LCC system omitting the sub-class BF – Occult Sciences. The DOAJ system only shows psychology as an option for category BF. However, in the 2022 LCC, there are 3 fields within the BF sub-class – Psychology, Occult Sciences and Parapsychology. Personnel searching for topics in occult sciences would have a hard time identifying which sub-class to review with the DOAJ system. However, the 2022 LCC system has more granularity and therefore has a better chance of classifying information correctly.

The following graph compares the quantity of 1st level sub-classes for each of the main classes for both the DOAJ and 2022 LCC systems.

Figure 2

Graph depicting the normalization of sub-class granularity between 2022 and DOAJ LCC systems



As Figure 2 shows, the 2022 LCC classification system showcases a much greater quantity of sub-classes for several of the main categories. 3 major classes that have a major discrepancy are:

1. Language and Literature
2. Law
3. Military Science

There are reasons for the major difference in granularity between the DOAJ and the 2022 LCC system. The Language and Literature category is split into 41 distinct categories. Compared

to the DOAJ LCC with their 15 distinct categories, it presents a major difference in how the data is categorized. For instance, the 2022 LCC has sub-classes such as “Byzantine and modern Greek literature” and “Medieval and modern Greek language”. Two very distinct categories, however the DOAJ LCC has only “Greek language and literature” to summarize these two sub-classes. This leads to less granularity and more confusion on the DOAJ system compared to the 2022 system.

Law is also laid out similarly. In the DOAJ system, it is split only into 5 sub-classes, while in the 2022 LCC system it is split into 29 sub-classes. With greater granularity comes greater ability to sort and categorize, and will improve efficiency in an information retrieval system as the result will be more accurate. The same can be said for the military science sub-class.

The following table summarizes the difference in sub-classes for the main class **Law** between the DOAJ and 2022 LCC systems.

Table 3

DOAJ vs 2022 LCC Law Sub-Classes

DOAJ LCC - Law	2022 LCC - Law
Law: Asia and Eurasia, Africa, Pacific Area, and Antarctica	America. North America
Law: Europe	Asia and Eurasia, Africa, Pacific Area, and Antarctica
Law: Islamic law	Europe
Law: Law in general. Comparative and uniform law. Jurisprudence	History of canon law
Law: Law of nations	Islamic law. Sharah. Fiqh
	Jewish law. Halakah
	Latin America (General)
	Law in general. Comparative and uniform law. Jurisprudence

	Law of Canada
	Law of nations
	Law of the Roman Catholic Church. The Holy See
	Law of the sea
	Law of the United Kingdom and Ireland
	Law of the United States
	Mexico and Central America (General)
	Religious law in general. Comparative religious law.
	South America (General)
	Space law. Law of outer space
	West Indies. Caribbean area

From analyzing Table 3, we can see that the DOAJ LCC system keeps the sub-classes high level, while also outright missing multiple sections that can be found in the 2022 LCC system. If searching for religious law, it would be difficult to categorize using the DOAJ LCC system. Comparatively the 2022 LCC system has much more efficacy when categorizing information.

To migrate the DOAJ system to the 2022 LCC system, adding further detail and granularity on the sub-classes is important in ensuring proper information allocation. At this point, multiple sources of information will have been categorized into seemingly unrelated sub-classes. Extensive analysis will be required to ensure information sorted into the higher level, less granular sub-classes of the DOAJ be rearranged and recategorized into the more detailed and more numerous sub-classes of the 2022 LCC.

Following the pattern of both Language/Literature and Law, Military Science is another category that gained many more sub-classes within the 2022 LCC system, compared to the DOAJ system. The following table summarizes the sub-classes of the DOAJ vs the 2022 LCC for the main class “Military Science”.

Table 4

DOAJ vs 2022 LCC Military Science Sub-Classes

DOAJ LCC - Military Science	2022 LCC - Military Science
Military Science: Military science (General)	Air forces. Air warfare
	Armies: Organization, distribution, military situation
	Artillery
	Cavalry. Armor
	Infantry
	Maintenance and transportation
	Military administration
	Military astronautics. Space warfare. Space surveillance
	Military engineering
	Military science (General)
	Other services

Table 4 is an extreme example of the DOAJ following a very high-level approach of presenting its sub-classes, versus the 2022 LCC approach of creating a much more granular system of sub-class. The DOAJ version has only 1 sub-class for military science, which means all of the information for this class can only be categorized and retrieved by searching through the 2nd and 3rd level sub-classes, or even individual journals. The problem with this method is that it almost eliminates the purpose of having a sub-class, as it is not classifying nor sorting anything. Compared to the 2022 LCC strategy of creating multiple distinct sub-classes, it is much less efficient at organizing and retrieving data.

3.3 Journal Reclassification Examples and Final Evaluation

By adopting the much more granular approach of the 2022 LCC system, classifying journals into specific sub-classes is much more straightforward. By adding more sub-classes to

choose from when categorizing journals, it becomes less confusing and less of a guessing game to ensure the journals are classified into the correct category. To test the new 2022 LCC method and compare it to the DOAJ method of classification, a random sample of 15 journals will be selected from the DOAJ database, classified into main and sub-classes and then compared to see how the DOAJ classified those journals. The 15 journals selected are tabulated on the next page, and have been assigned a corresponding class and sub-class as per the new 2022 LCC system.

#	Internal ID	Journal Name	DOAJ LCC		2022 LCC	
			Main Class	1st Level Sub-Class	Main Class	1st Level Sub-Class
1	ISI5302_3839	Journal of Military and Strategic Studies	Military Science	Military science (General)	Military Science	Armies: Organization, distribution, military situation
2	ISI5302_5240	New Proposals	Social Sciences	Social sciences (General)	Social Sciences	Commerce
3	ISI5302_5241	Evidence Based Library and Information Practice	Bibliography. Library Science. Information Resources (General)	Books (General). Writing. Paleography. Book industries and trade. Libraries. Bibliography	Bibliography. Library Science. Information Resources (General)	Libraries
4	ISI5302_6813	Journal of Teaching and Learning	Education	Education (General)	Education	Theory and practice of education
5	ISI5302_6834	Cuizine : the Journal of Canadian Food Cultures	Geography. Anthropology. Recreation	Manners and customs (General)	Geography. Anthropology. Recreation	Manners and customs (General)
6	ISI5302_6835	Global Media Journal: Canadian Edition	Social Sciences	Sociology (General)	Social Sciences	Transportation and communications
7	ISI5302_15419	Monstrum	Fine Arts	Arts in general	Fine Arts	Visual arts
8	ISI5302_3836	Canadian Journal of Applied Linguistics	Language and Literature	Philology. Linguistics	Language and Literature	Philology. Linguistics
9	ISI5302_3840	International Review of Research in Open and Distributed Learning	Education	Special aspects of education	Education	Special aspects of education
10	ISI5302_6810	Studies in Social Justice	Social Sciences	Social pathology. Social and public welfare. Criminology	Social Sciences	Social pathology. Social and public welfare. Criminology
11	ISI5302_6811	Culture and Local Governance	Social Sciences	Communities. Classes. Races	Social Sciences	Communities. Classes. Races
12	ISI5302_6814	Partnership: The Canadian Journal of Library	Bibliography. Library Science. Information Resources (General)	Books (General). Writing. Paleography. Book industries and trade. Libraries. Bibliography	Bibliography. Library Science. Information Resources (General)	Libraries
13	ISI5302_6832	Ideas in Ecology and Evolution	Science	Natural history - Biology	Science	Biology (General)
14	ISI5302_6836	Canadian Journal of Education	Education	Education (General)	Education	Education (General)
15	ISI5302_15420	JMIR Pediatrics and Parenting	Medicine	Pediatrics	Medicine	Pediatrics

Table 5 – DOAJ vs 2022 LCC Reclassification Exercise

Reviewing Table 5, journals #1 to #8 were identified to be reclassified into a more specific or relevant sub-class in the 2022 LCC versus the DOAJ. However, the remaining 7 journals were accurate in the sub-class they were already classified in the DOAJ. This illustrates that the addition of 111 sub-classes has a large impact on the classification of journals, and can radically change the outcome of where information can be categorized. However, it is important to note that the addition of more classes can oftentimes create confusion as to which classes journals should be categorized against. When reclassifying the above journals, it became harder to determine where the information would be stored at times. It is important that enough sub-classes exist as to ensure information is uniquely sorted, while refraining from getting in the weeds and adding too many classes so that it becomes impossible to accurately classify more broad journals.

In the end, the old LCC utilized by DOAJ is extremely broad in the way it presents its sub-classes compared to the new 2022 LCC. The addition of 100+ sub-classes help to narrow down some of the more general sub-classes and allows for information to be more properly sorted. An argument could be made that in some of the sections there are too many sub-classes which can bog down the act of classifying some of the broader journals, however overall the additional sub-classes create a more precise and logical classification system. While reclassifying the sample set of journals, it was overall much easier to classify using the 2022 LCC system versus the DOAJ system.

4. Recommendation and adoption

As stated above, the DOAJ is using a truncated version of the LCC system. Our first recommendation would be to use the full system. Getting those 111 new classes would contribute to classification accuracy and provide more precision. A wide range of topics (psychology,

language, literature, etc.) would benefit from those extra classes based on our evaluation and the literature review. The 111 sub-classes offer more options for classification and relevance.

However, at the core, the LCC system was created in the United States which is one of its major problems that we have noticed. Even with the added classes of the full LCC system, some topics are still misrepresented: religion, history, and cultures, to name a few.

Since it would probably be too much work for the DOAJ to implement its own classification system, we also recommend adaptation. This is a path that other authors have suggested (Jiang, 2007). Other institutions have made changes to adapt the LCC system after noticing its problems (McKennon, 2006; Idrees, 2012). Therefore, the DOAJ could work with international consultants and experts on these sensitive topics that are misrepresented in the LCC system (Adler et al., 2017; Clark & Smith, 2022; Howard & Knowlton, 2018) to make these adaptations. As a result of these improvements, the DOAJ could become a leader of a new and improved LCC system. Because the organization has international recognition and is working with journals from around the world, it could potentially influence other institutions to adapt their LCC system and follow the adjustments made by the DOAJ. An international collaboration between key players would be required for such changes to happen. Even though adaptation of the LCC system is our main recommendation, we recognize that it could potentially create some disparity and a lack of uniformity. A group consultation and an approval system would need to be implemented. Not everyone should be allowed to make adaptations within the DOAJ organization. These changes should be approved and “peer-reviewed” by other institutions, based on the subject matter. Using international expertise would be a good way to make sure that all cultures are better represented. An upgraded LCC system should enhance retrievability. DOAJ journals should be better classified in respect of the subjects they are covering, but they should

also be easy to retrieve. This is an important characteristic of the system. Classification changes should be announced on the DOAJ website and shared with publishers and editors. A section on the topic of classification should be added to the DOAJ website for transparency.

The LCC system can be adapted and the DOAJ should make changes to the existing system while also using all the classes available. The goal is to provide better accuracy. The American Library Association's Analysis Committee Working Group on Alternatives to LCSH is working on a system that would allow libraries to address issues with pre-existing term choices in the LCC system by giving them the option to change these terms within their catalogues (Stapleton et al., 2021).

5. Conclusion

In conclusion, the DOAJ needs to update its classification system to a more comprehensive and inclusive one. As proven in the project, the LCC system is misrepresenting different cultures, religions, concepts, and people. Therefore, it does not reflect the DOAJ's diversity and its intent to use a global approach. Many articles have analyzed the shortcomings of the LCC system. Institutions around the world have taken steps to make adaptations to catering to their needs. This is also an option that we recommend for the DOAJ. The LCC system is based on the biases it was originally created on because it is euro-western centric and outdated, hence the need for adaptations. Therefore, we recommend that the DOAJ modifies the system, based on international expertise, to offer a more accurate representation of the journals it indexes. However, the organization must be aware of any uniformity or consistency issues when making adaptations. The DOAJ is currently using a truncated version of the LCC system. Consequently, our suggestion is to use the full LCC system: it would add more classes and would allow for more precision. The LCC system is adaptable, modifiable, and extendable. The categories would

be easy to map and migrate between the two versions of the LCC system. It would be easy to use for humans and for machines to ingest the metadata because it is the same system, just an expansion of the current version used by the DOAJ. By making these changes, the DOAJ would be closer to achieving its goals and fulfilling its mandate.

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